What is a volcano?

GEOGRAPHY

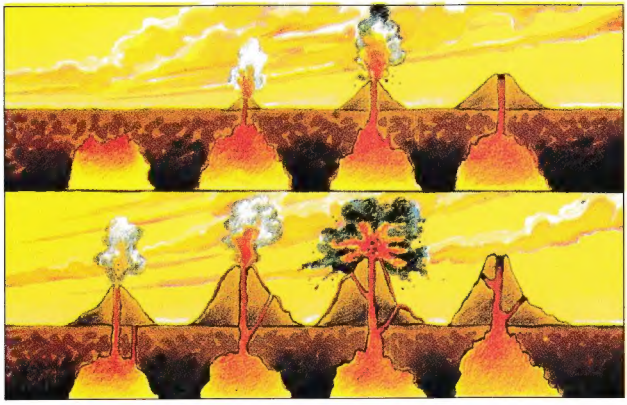
1. An opening in the Earth's crust
2. A mountain with a firey center
3. A mountain that sticks up out of the sea

© 1995 Nintendo

Volcanoes

Volcanoes are holes that allow molten rock from deep within Earth to come to the surface.

1 A volcano is an opening in the Earth's crust.



Ill. J. Daig

As lava spews out during an eruption, it forms a volcanic cone.

Volcanoes are openings in the Earth's crust that allow hot liquid rock and gases to escape. Many of Earth's mountains and islands were formed from the material that came out of volcanoes.

Down deep in Earth is a pool of magma—melted rock and gas. When there's too much pressure underground, the magma bubbles up to the surface, where it's known as lava. One kind of volcano explodes violently, spewing hot gas and ash high into the air, where the wind dumps it over miles and miles of land. Another kind just spills lava out of its opening and creates gently sloping hills that run down to the sea. The third kind sometimes explodes and sometimes gently pours lava.

Lava blown or poured from a volcano piles up in a cone-shape. As it cools, it hardens, creating mountains or islands . . . or extending an old island further out into the sea.

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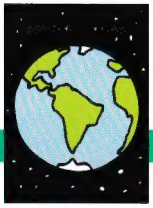
What is the highest mountain in the world?



GEOGRAPHY

1. Mount Everest in the Himalayas
2. Mont Blanc in the Alps
3. K2 in the Himalayas

© 1995 Nintendo

Himalayas

In 1987, the K2 expedition in the Himalayas thought they proved K2 the highest mountain in the world. They later discovered it was not.

1 Mount Everest, in the Himalayas, is the highest mountain in the world.

IL DR

K2 and Everest are in the Himalayas, world's highest mountain range. Over 1,500 miles (2,410 km) long, it has 200 summits over 23,000 ft (7,000 m)!

There had been a debate over which was taller, Mount Everest or K2, a peak in the Karakoram Range of the Himalayas. In 1953, Everest, at 29,028 ft (8,848 m), was conquered by Edmund Hillary of New Zealand. Just 14 months later, some Italians climbed to the top of K2. It measured 28,250 ft (8,611 m).

The debate continued; people thought the measurements incorrect. So in 1987, an American team climbed K2. Their altitude recorder registered 29,061 ft (8,860 m), taller than Everest!

Many scientists disagreed with the new measurements and blamed them on extra snow cover, not height. The debate was finally settled with a measurement taken from space. The result? Still winner and champion, Mount Everest: Tallest Mountain in the World!

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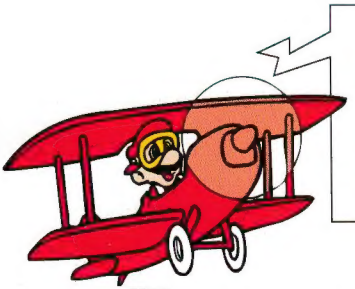
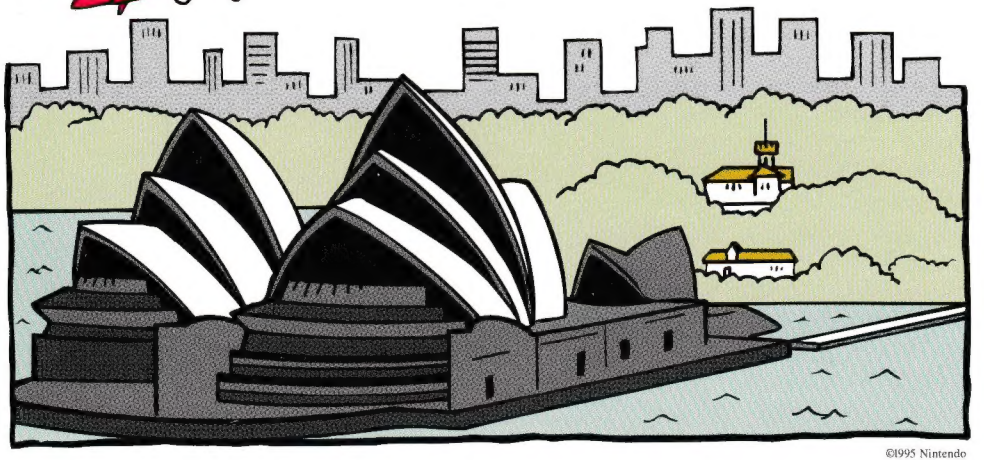
D3 054 02-06

Which is the largest city in Australia?

GEOGRAPHY



1. Djakarta
2. Sydney
3. Canberra



©1995 Nintendo

Sydney

Sydney is both the oldest and largest city in Australia and is the country's principal port.

2 Sydney is the largest city in Australia.

Ill. Y. Taburiés

Most Australians live in towns. Sydney, Melbourne, Brisbane, Adelaide, Perth, and Darwin are on the coast. Australia's capital, Canberra, is located inland.

Two hundred years ago, Sydney was just a handful of wooden huts that housed convicts deported from England. They included thieves, pickpockets, and other criminals for whom the overcrowded English prisons had no room. At first their lives were very hard indeed and, apart from them and the men who guarded them, only Aborigines lived in Australia. Convicts who behaved themselves were ultimately able to buy plots of land and the clever ones went on to make their fortunes. Since then, many thousands of people have chosen to emigrate to Australia; not just English but Greeks, Yugoslavians, French, Germans, and many others.

Rapid Expansion

Today, the old town of Sydney is a great city of skyscrapers and a thriving port that exports wool, meat, and grain to the whole world.

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What river divides the U.S. into East and West?

GEOGRAPHY

1. The Mississippi
2. The Colorado
3. The Susquehanna

©1995 Nintendo

The Mississippi River

Running north and south, the Mississippi divides the U.S. into two areas: East of the "Mississippi" and "West of the Mississippi."

1 The mighty Mississippi divides the U.S. into East and West.

Photo Jerry Stebbins

The Mississippi is about 2,348 miles (3,778 km) long, but is noted for sudden changes in course. So its length varies by about 50 miles (80 km) a year!

Known as the "father of rivers," the Mississippi is the chief river on the North American continent and one of the world's greatest rivers. It divides the U.S. from north to south, between Lake Itasca in northwest Minnesota and the Gulf of Mexico below New Orleans, Louisiana.

Flooding along the banks of the Mississippi is a big problem. During the summer of 1993, the river carved a new course through parts of the Midwest. Thousands of people piled up sandbags to try to stop the river. They not only lost the battle, they lost their homes to the river's raging waters.

The Mississippi, a major transport route, played an important role in the development of the West. Today boats on the river still deliver important goods to many cities.

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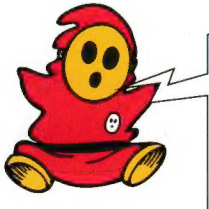
Why do we have earthquakes?

GEOGRAPHY



1. Earth's surface is made of constantly moving plates
2. As Earth moves through space, its surface vibrates
3. Heavy mountains press on Earth's surface

©1995 Nintendo

Earthquake

Earth's outer shell is made of large plates, a little like a jigsaw puzzle. These plates are in constant movement in relation to one another.

1 We have earthquakes because Earth's surface is made of constantly moving plates.

Photo © Kraft / Explorer

The force of an earthquake can rip highways apart as if they were made of paper!

Friction Creates Force

As Earth's plates move, they bump against each other. Millions of tons of rock rub together and create pressure near the plates' edges. Soon there's a whole lot of shaking as Earth relieves the pressure by sending shock waves out from the point of pressure. It's an earthquake!

Earth Never Sleeps

Our planet is always changing. Earthquakes help to constantly reshape Earth's surface. The Pacific Plate, including California's coastline, has moved 190 miles (305 km) toward the North American Plate during the past 15 million years. And California's San Andreas Fault still moves about 2 inches (5 cm) each year!

Daily Shake-ups

Earthquakes occur somewhere in the world every day. Many are so small that people don't even notice any ground movement. But special machines track the tiny quakes to help scientists predict when really big ones might occur.

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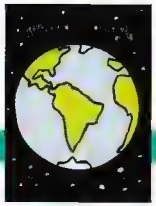
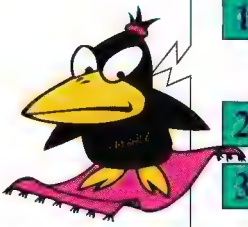
What are latitude and longitude?



GEOGRAPHY



1. Measurements that specify each point on Earth
2. Distances from Earth to the moon and sun
3. The length and width of a football field

©1995 Nintendo

Latitude and Longitude

On a map, Earth is divided by imaginary lines called parallels and meridians. Parallels are drawn horizontally; meridians are drawn vertically. The lines form a grid on which you can calculate the position of any point on Earth.

1 Latitude and longitude are measurements that specify each point on Earth.

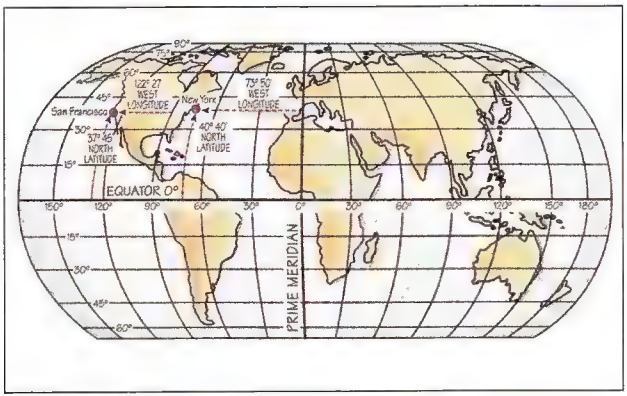


Illustration by Irene Mudzinski

A map's longitude and latitude lines form a grid to help you find the exact location of any place on Earth.

Parallels

Parallel rings on a map mark the latitudes from 0-90 degrees. The longest parallel is at the equator, an imaginary line that's an equal distance from the North and South Poles. The equator is designated 0 degrees latitude and each parallel above or below it is numbered by degrees north or south of the equator—the North Pole is 90 degrees north; the South Pole is 90 degrees south.

Meridians

Meridians mark longitude from 0-180 degrees. The prime meridian, passing through Greenwich, England, is 0 degrees longitude. Every other meridian is numbered by degrees west or east of the prime meridian—Boston, U.S.A., is 70 degrees west.

Now, use a map to check out the longitude and latitude of your home town!

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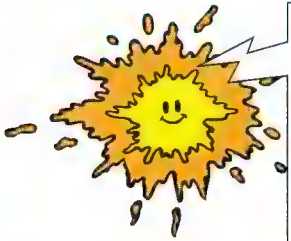
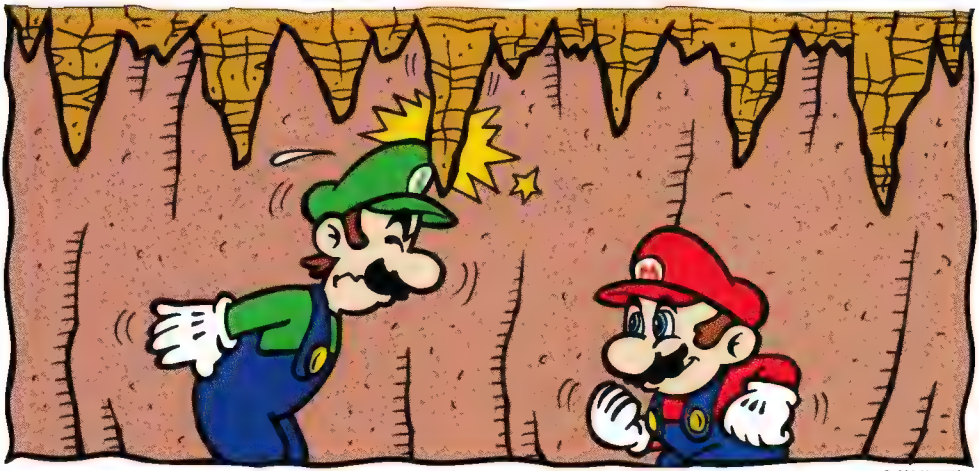
What's a stalactite?

GEOGRAPHY



1. Salt lake in an underground cave
2. Measurement used by spelunkers
3. Limestone column that forms on the ceiling of an underground cave



©1995 Nintendo

Stalactite

A stalactite forms when trickling groundwater seeps into an underground limestone cave. Because of chemicals in the water and stone, a mineral deposit accumulates like an icicle.

3 A stalactite is a limestone column that forms on the ceiling of an underground cave.

Photo © Ferrel / Explorer

Tourists visit underground caves like this one in France to view the magnificent stalactites and stalagmites.

Many limestone caves have been dug over the centuries by the constant movement of underground water. Often such caves have magnificent overhead curves notched with splendid stalactites. It normally takes about 100 years for a stalactite to grow just one-third of an inch (1 cm)!

Drop on drop

When the first drop of water seeped in through the limestone ceiling of the cave, it carried calcium that dissolved in the water. As the water evaporated, it left behind sparkling crystals of calcite (calcium carbonate) that formed a tiny column pointing toward the soil. As the water continued to drip and more drops came through, more and more calcite clung to the stalactite columns. If the calcite crystals had fallen to the floor and built up from the bottom of the cave, they would have been stalagmites.

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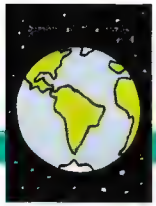
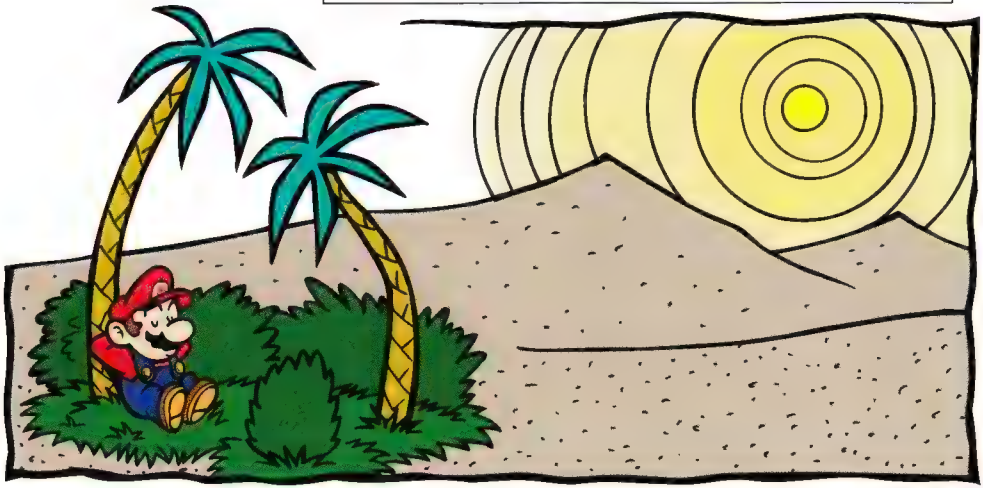
How can an oasis with plants grow in a sandy desert?



GEOGRAPHY

1. Because of underground water
2. Because deserts have a lot of rain
3. Because there are many rivers in a desert



©1995 Nintendo

Oasis

An oasis is like an island of cool water and green plants floating in the middle of a sandy sea. Such a place is possible because of layers of underground water that may rise to the desert surface or be brought up by wells or water pipes.

1 **An oasis filled with green plants exists because of underground water sources.**

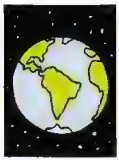


Photo © Rordes/Explorer

In an oasis, a network of irrigation ditches distributes the water to allow farming in adjacent fields.

A desert oasis is a fertile area where underground water comes close enough to the sandy surface for springs and wells to exist. The water originally fell in distant hills and mountains as rain and snow or was part of a mountain stream. It seeped into the high ground and slowly filtered through rocks and soil leading down to lower ground. There, near rocks or dunes the water bubbled up in natural springs or was close enough to the surface to allow wells to be sunk. Date palm trees flourish in the warm, moist land of an oasis.

People and Plants

Because of the convenient water supply, an oasis is almost always an area of settlement and farming. Depending on its size, an oasis may have only a few people or a large population.

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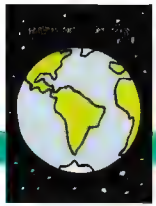
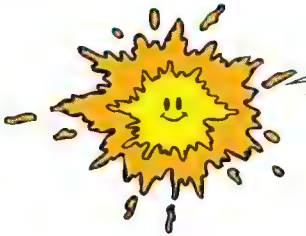
D2 491 06-09

Which famous volcano erupted on the island of Martinique?



GEOGRAPHY



1. Mount Pelé
2. Mount St. Helens
3. El Chichon

©1995 Nintendo

Volcano

The 1902 eruption of Mount Pelé was the 20th century's most lethal, killing 30,000 people. Unfortunately, forecasting when a volcano is going to erupt isn't a simple task.

1 In 1902, Mount Pelé erupted on the island of Martinique in the West Indies.

Photo © Kraft/Explorer

When Mount Pelé erupted in 1902, everyone in St. Pierre except one died. A prisoner being held in the badly ventilated city dungeon was protected from the volcano's lethal gas fumes.

Mount Pelé rises 4,583 feet (1,397 m) above the island of Martinique in the Caribbean. In 1902, the volcano erupted, spewing fiery ash and burning gas on the city of St. Pierre 248 miles (400 km) away. Inhabitants had no time to escape, and 30,000 died.

Killer Eruptions

Other volcanoes have taken lives. In 1985, Colombia's Nevado del Ruiz killed 22,940. And in 1883, Indonesia's Krakatau killed 35,000 in the 19th century's most lethal eruption.

Seismology Studies

Scientists use new technology to monitor vibrations in the soil and changes in temperature or fumes from volcanos. Hopefully warnings can be issued and people will be evacuated before another one blows its top.

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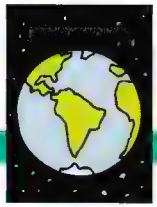
Which waterfalls are the largest in the Americas?



GEOGRAPHY

1. Niagara falls
2. The falls of Iguazú
3. The Amazon falls

©1995 Nintendo

Iguazú

South American Indians called the waterfall on the border between Brazil and Argentina Iguassú, meaning "great waters." And Iguazú Falls, with a total of 275 cascades, is still the most spectacular waterfall in the Americas.

1 The falls of Iguazú are the largest waterfalls in the Americas.

Photo © Gohier/Explorer

A mist forms over Iguazú Falls as river water thunders over the edge and crashes into a pit below.

Iguazú Falls start with the merging of two rivers. The Iguazú River originates in southeastern Brazil and slowly flows 380 miles (611 km) west through the jungle to empty into the Paraná River. During the rainy season—November to March—the rivers form an impressive waterway as big or bigger than six Olympic-sized swimming pools!

Thundering Falls

Near the point where the two rivers meet, in a 2.5-mile (4-km) wide area of rocky tree-covered islands, 275 cascades form Iguazú Falls. There, from a height of 230 ft (70 m), the foaming water plunges directly down into a deep-cut pit known as "Devil's Pass." The falls spill an average of 61,000 cubic ft (1,708 m^3) per second!

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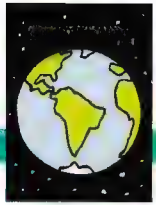
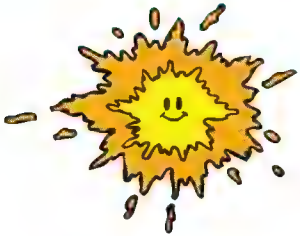
Which is the world's largest river by volume?



GEOGRAPHY



1. The Mississippi
2. The Amazon
3. The Danube

©1995 Nintendo

Amazon

From its source in the Andes to where it empties into the Atlantic, the Amazon travels 4,000 miles (6,452 km). It dumps more water into the sea in one day than most rivers do in a year. It produces 1/5 of the world's fresh water!

2 The Amazon is world's largest river by volume.

Illustration by Mimi Perrotti

The mouth of the Amazon divides the land into a vast delta as wide as Switzerland.

The Amazon starts more than 18,000 feet (5,500 m) up in the Andes of Peru. As it heads to the Atlantic, it's joined by more than 1,000 tributaries that add another 50,000 miles (80,640 km) of navigable water. Together they drain a basin covering 2,053,318 square miles (5,264,918 km^2), a surface almost equal to the size of Australia!

Road to the Sea

At its start, the Amazon runs down steep mountain slopes, but when it flows into Brazil, it reaches low ground and slows down in its race to the sea. Every year, the Amazon floods about 24-62 miles (40-100 km) on either side of its bed. Discharge of water at the mouth of the Amazon averages 7,000,000 cubic feet (198,188 m^3) per second, more volume than any other river in the world.

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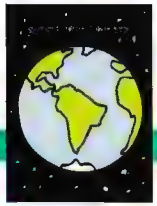
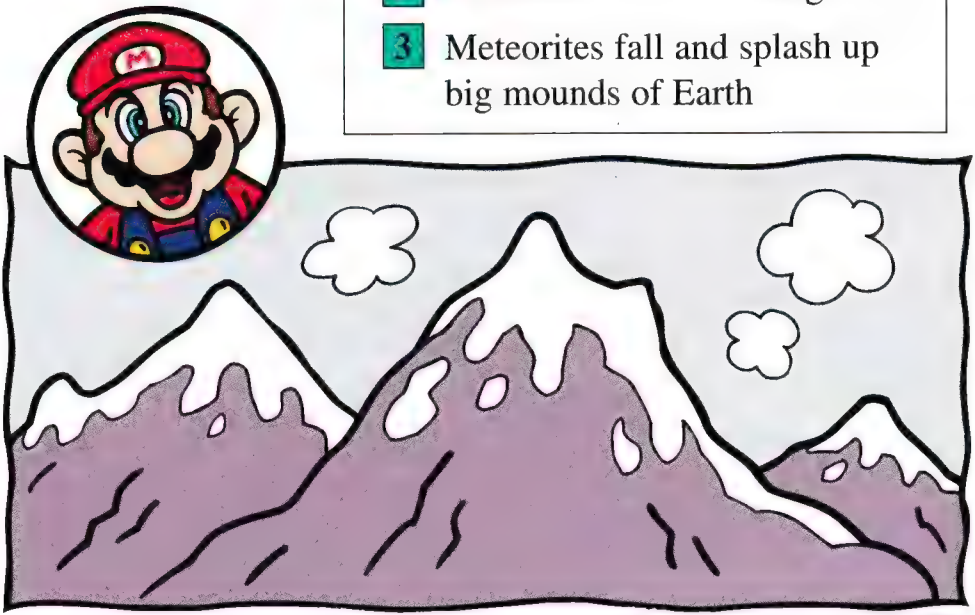
How are mountains created?



GEOGRAPHY

1. Earth's crust folds or wrinkles
2. Bombs are set off underground
3. Meteorites fall and splash up big mounds of Earth



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Mountain Formations

Earth's crust is made of large plates in constant movement in relation to one another. When two plates rub together or move apart, the pressure created forces some of Earth's surface upward forming mountains.

1 Mountains result when Earth's crust is folded or wrinkled.

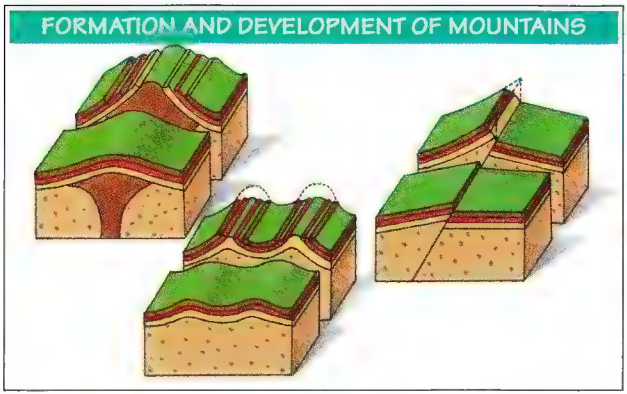

Illustration © Y Tabarés.

Some mountain folds form a central peak with inclined sides, some form almost even "pleats," and some tilt forward to hang over rocks.

Earth's crust is not continuous, like the shell of an egg. Instead it is carved into rocky pieces or plates that are in constant motion. As the plates drift, they can change Earth's landscape.

Drifting Plates

Earth's plates "float" on a layer of hot, churning magma. When the plates collide or rub against one another, they form creases or wrinkles in the ground above them to create mountains. These changes are very slow, from 6 inches to 3 feet (.2-1 m) every thousand years.

Birth of the Rockies

Millions of years ago two giant land masses collided. Rocks on the sea floor were pushed up and some folded over onto others. After millions of years of action, the Rocky Mountains of the western U.S. stretched out and stood tall.

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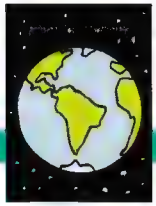
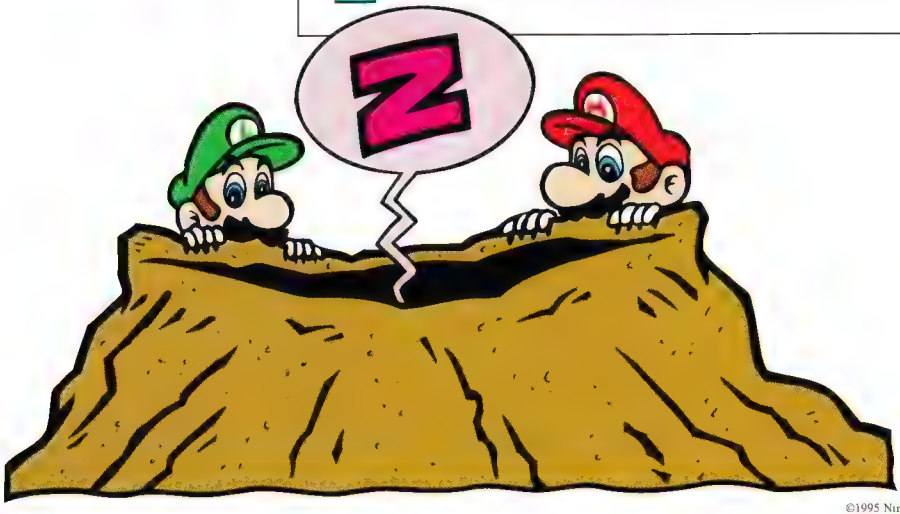
D3 054 08-18

When is a volcano extinct?



GEOGRAPHY

1. When the crater is filled by solidified lava
2. When the crater explodes
3. When the lava doesn't overflow



©1995 Nintendo

Extinct Volcano

Scientists say a volcano is extinct or dormant when the vents in its crater are blocked by solidified lava. But unlike extinct dinosaurs that are gone forever, an extinct volcano can awaken with a bang!

1 **A volcano is extinct when the crater is filled by solidified lava.**

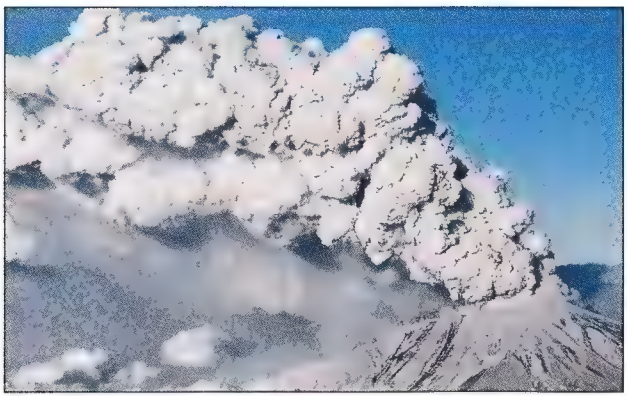


Photo © Kraft / Explorer

The wakening of Mount Saint Helens was spectacular. The explosion blew off 1,410 feet (430 m) from its summit!

When scientists talk about an extinct volcano, they mean one that is inactive, or asleep. They know that at any time, the dormant volcano might awaken and blow its top!

Sound Sleepers

In Europe, many volcanoes have been extinct for thousands of years—people even walk down into their craters. But numerous hot springs in the area are proof that Earth's inner heat isn't far away. Are the springs just a memory of the past or a wake-up call for a future volcanic eruption? It's impossible to know. In the U.S., Mount Saint Helens was considered dormant for 120 years. But in 1980, the volcano awakened with a roar that blew its top off, killed 60 people, and sent volcanic ash over much of the states of Washington, Oregon, Idaho, and Montana!

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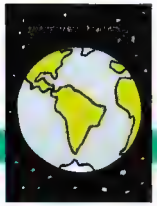
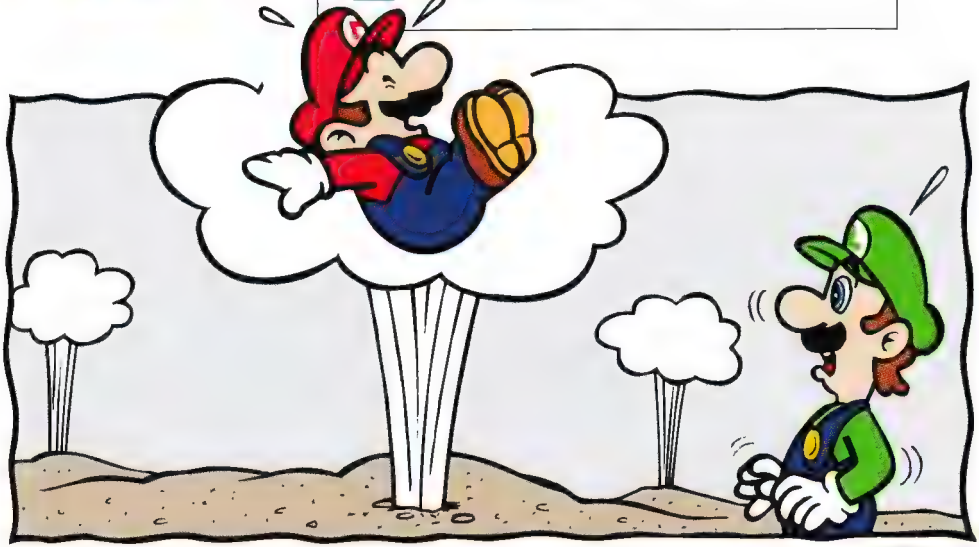
D3 054 08-20

What's a geyser?



GEOGRAPHY

1. A windstorm
2. A spring that spouts hot water
3. An underground cave



©1998 Nintendo

Geyser

A geyser is a spring with an underground source heated by volcanic matter called magma. When it heats up, the geyser shoots a column of water straight up to the skies.

2 A geyser is a spring that spouts hot water.

Photo © Krafft / Explorer

The opening through which a geyser spews steaming water is like the spout of a tea kettle.

Geysers occur in volcanic regions and are fed by underground water that seeps into the earth from nearby rivers and streams. The water is constantly under pressure as it heats to a boiling point. The boiling water turns to steam, rises, and pushes water above it up toward the surface. More steam expands and shoots the remaining water out of the ground in a column that can sometimes spout 200 ft (61 m) high. Yellowstone National Park is famous for its geysers; the best known is Old Faithful, which blows about once an hour. The park's Steamboat Geyser holds the record for shooting—400 ft (120 m) high!

Quiet Time

Once the geyser blows, the underground pressure lessens and the gushing stops. It resumes as soon as the underground water builds up more pressure.

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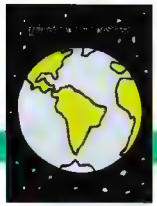
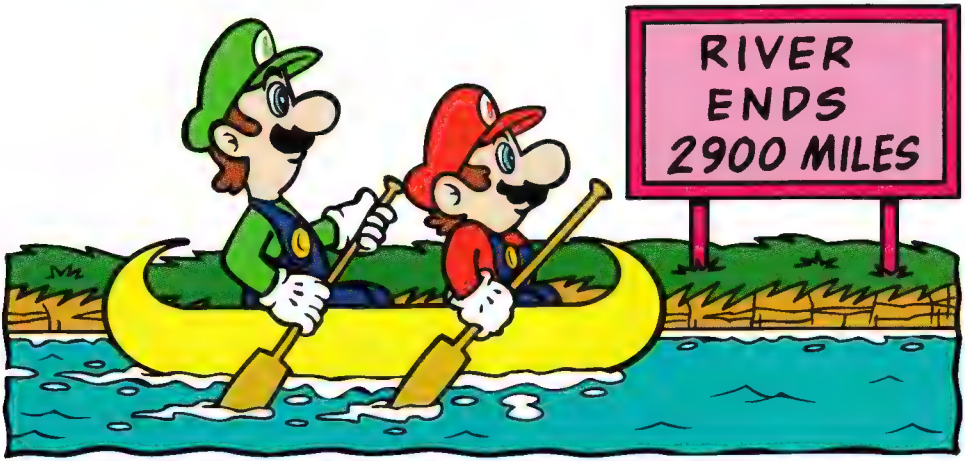
D3 054 09-14

By what name is the Zaire River also known?



GEOGRAPHY

1. The Limpopo
2. The Congo
3. The Chari

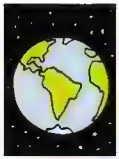


©1995 Nintendo

Zaire River

Many people know the fifth longest river in the world as the Congo. But in 1971, the government officially changed its name to the 15th century Portugese version of the local name for the river: Zaire.

2 The Zaire River is also known as the Congo.



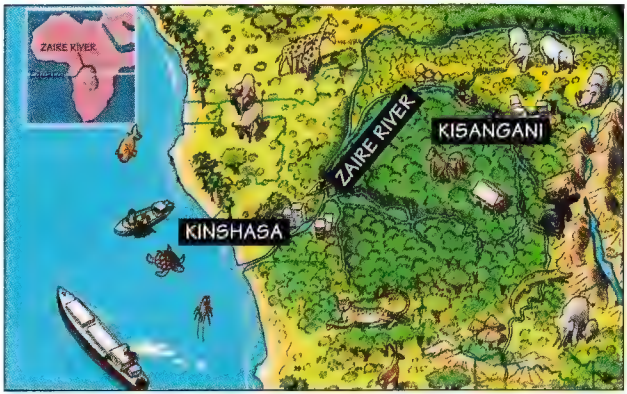


Photo © Y. Tabarié/s

In the 15th century, boats were unable to navigate between Kinshasa and Kisangani. The river was impassable due to waterfalls and dangerous rapids.

The Zaire River begins in Zaire where the Lualaba and Luvua rivers meet. Flowing for 2,900 miles (4,667 km) through west-central Africa, the river forms the border between Zaire and the People's Republic of the Congo for 500 miles (800 km) before emptying into the Atlantic.

Discovery

Early Portuguese explorers came upon the mouth of the river in 1482. They could go upstream only a short distance before running into rapids with impassable cascades. In 1866, David Livingstone explored the upper regions of the river and in 1877, Henry Stanley finally navigated the entire Congo. Instead of going upstream, he went down from east Africa, crossing the country through uncharted forests. On his trip, he crossed the equator twice.

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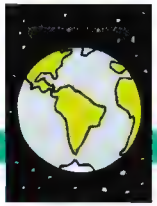
What is a breaker?



GEOGRAPHY

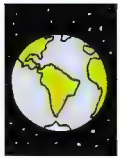
1. A new dance step
2. A wave
3. A small island

©1995 Nintendo

Waves

The wind can stir up waves that move through the water. They may be small ripples or giant waves whipped by a hurricane to more than 100 feet (30 m) high. When the wave reaches land, it breaks and laps the shore.

2 **A breaker is a wave that spills, or breaks, on the beach.**



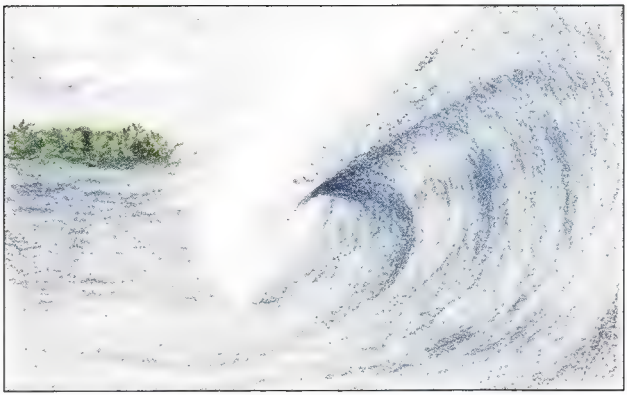


Illustration © Mimi Perrotti

The ocean is never still and in its movement exists great power and beauty.

The size and force of waves depend on how long the wind blows, the wind speed, and how far the waves are blown over the water. If the wind continues to blow for a long time, the waves mount higher and higher, then break in what are called whitecaps. After the wind calms, the waves continue their journey across the sea and may travel for long distances. Finally they reach land and break on the shore to form what's known as the surf.

Wear-Down and Build-Up

The action of waves can change a shoreline. They carry away sand from beaches and cut away sloping land to sculpt steep cliffs. They also can create sand bars and beaches with the material they lap on shore. A beach's color and make-up depends on the types of rocks that have been worn away and carried to it by the waves.

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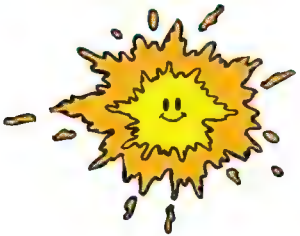
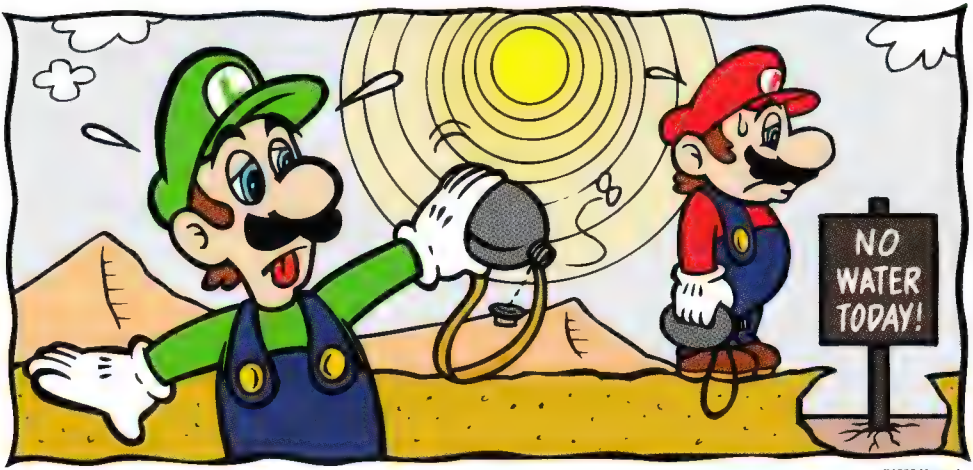
D3 054 09-20

Which is the world's driest desert?

GEOGRAPHY



1. The Mojave
2. The Gobi
3. The Namib

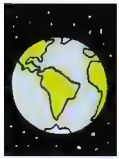


©1995 Nintendo

Namib Desert

Africa's Namib Desert is the world's driest. It's located in Namibia, formerly called South West Africa.

3 The Namib is the world's driest desert.



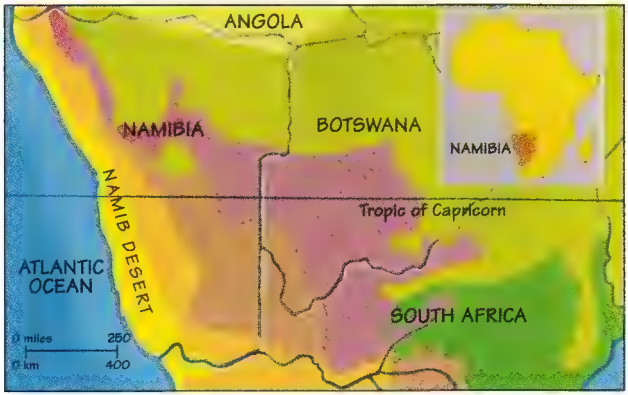


Illustration © Y. Tabaries

The Namib borders the Atlantic in southwest Africa.

The Namib Desert borders the Atlantic coast from Angola to the Orange River south of Namibia. To the north are rocky prairies and rugged mountains. To the south, the desert is a wide sea of red sand. Dunes, piled up by the wind, are separated by basins called "roads." There, in ancient gravel terraces that rest beneath the sand, is the largest layer of diamonds in the world.

Dry, Dry, Dry!

The damp winds of the Atlantic chill when they meet the cold wind-flow coming from the Antarctic. The winds carry rain with them, but they dump it over the sea and bring only heat and drought to the dry, sandy desert. Not more than 1 inch (2.5 cm) of rain falls in the Namib per year. Nevertheless, some insects and lizards have successfully adapted to life in the nearly constant arid conditions.

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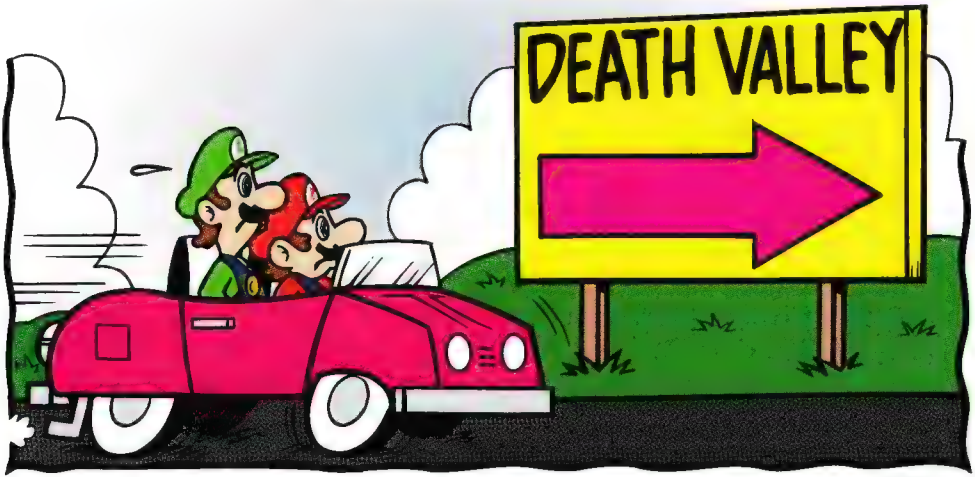
Where is Death Valley?

GEOGRAPHY

1. In Africa
2. In Australia
3. In the United States



©1995 Nintendo

Death Valley

Under the scorching California sun sits Death Valley, the hottest place on Earth. The highest recorded U.S. temperature, 134° F (57° C), was registered here in 1913.

3 Death Valley is in the United States.

Photo © Thomas / Explorer

Death Valley can be dangerous for anyone who strays from the main roads. Travelers in trouble have to wait for a patrol.

Death Valley was covered by a sea millions of years ago. It was later called Tomesha, or "ground afire," by the Panamint Indians of the region. Today its features include sand dunes, rocks, lake beds, crusty salt flats, multicolored hills, and the small salty pool of Badwater—the lowest point in the Northern Hemisphere, 282 ft (86 m) below sea level. In 1933, the area was proclaimed Death Valley National Monument. In October 1994, Death Valley was named a U.S. National Park.

Life in the Desert

Any rain that does fall in Death Valley quickly evaporates in the extreme heat. Nevertheless, some plants have adapted to the dryness of desert life. This allows some animals, like kangaroo rats, scorpions, small lizards, and rattlesnakes, to live there too.

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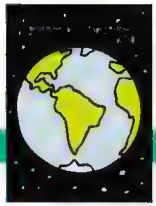
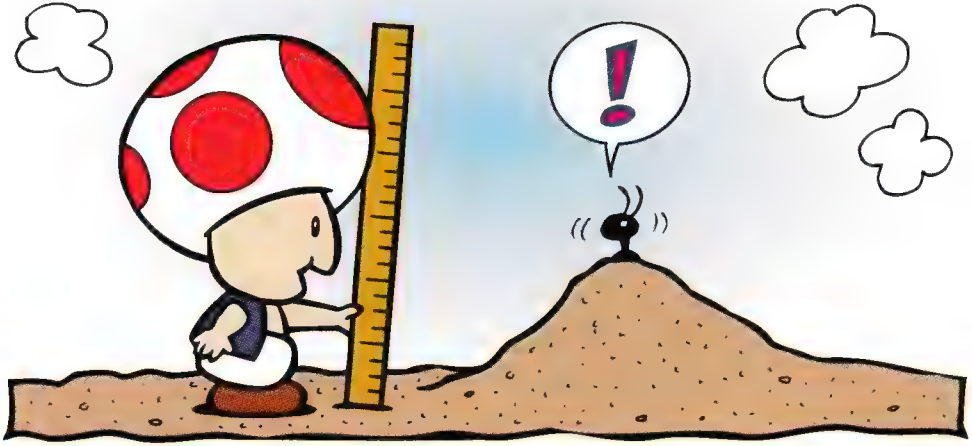
D3 054 10-08

At what height is land defined as a mountain?



GEOGRAPHY

1. Starting at 2,000 feet (600 m)
2. Starting at 4,920 feet (1,500 m)
3. Starting at 6,560 feet (2,000 m)



©1995 Nintendo

Mountain Altitude

Geographers define a mountain as a land formation that rises at least 2,000 feet (600 m) above its surroundings. It must also include two climatic zones.

1 **Land above 2,000 feet (600 m) is classified as a mountain.**

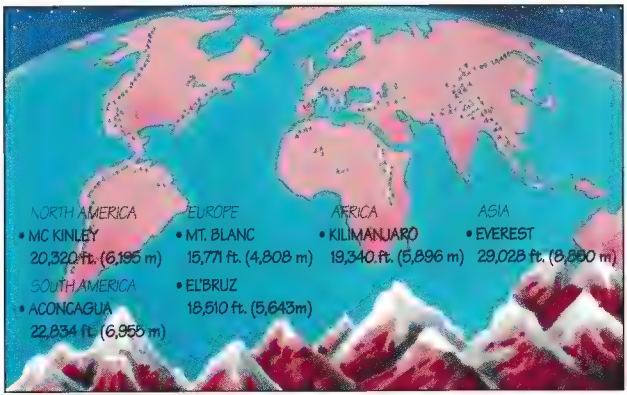


Illustration © Y Tabarés

Mountains make up one-fourth of the land on Earth.

The heights of Earth's many mountains vary widely. For example, a hill overhanging a valley is a dwarf mountain compared to the Alps' massive Mont Blanc. But even with its 101 glaciers and numerous summits over 13,120 feet (4,000 m), the Alps look small compared with the giants of the Himalayas at 29,028 feet (8,848 m).

Peaks and Valleys

Temperatures decrease about 1°F (.6° C) for every 330 feet (101 m) of altitude. And, in general, precipitation in the form of rain or snow is much greater in the mountains than in the surrounding lowlands. A typical mountain summit—the highest point—is nothing but naked rock. Below are steep, sheer slopes, followed by strips of vegetation that cascade down the rugged hillsides. At the bottom is a forest of thick vegetation, followed by an area filled with lofty pines. Then come the grasslands, and finally, a rocky area where nothing but mosses and lichens grow.

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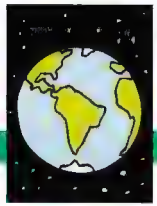
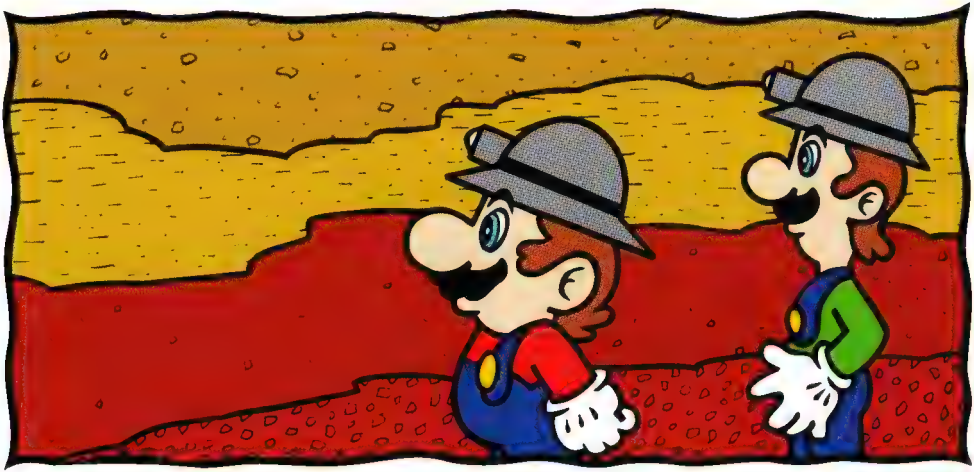
What is Earth's mantle?



GEOGRAPHY

1. The highest land point or mountain peak
2. The liquid core at the center of Earth
3. A thick layer of rock surrounding Earth's core



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Inside the Earth

The center of Earth has two parts: a solid inner core of metal surrounded by a liquid outer core of molten metal. The whole core is covered by a thick shell, or mantle, of rock that separates the core from Earth's surface, or crust, on which we live.

3 The mantle is a thick layer of rock surrounding Earth's core.

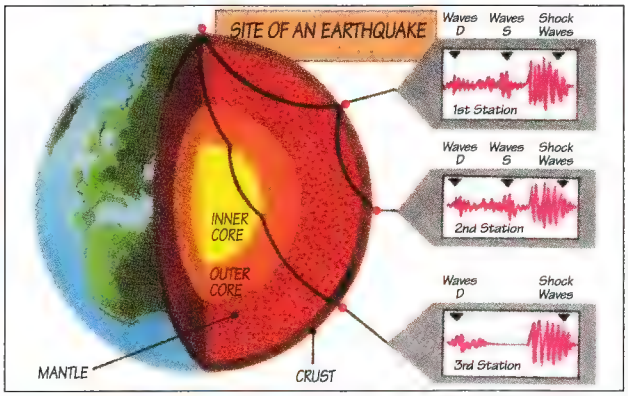

Illustration © Y. Tabaries

To learn more about the make-up of Earth, scientists study how seismic waves from earthquakes travel through the different layers.

Earth's two-part core is 2,200 miles (3,540 km) from the surface, or crust. It's surrounded by a mantle of silicon, oxygen, aluminum, iron, and magnesium 1,800 miles (2,900 km) thick. On top of it sits Earth's crust, just 5-25 miles (8-40 km) thick.

Buffer Zone

Earth's mantle acts as a buffer between the molten outer core and the crust's plates. Temperature of the mantle's upper region is 1,600° F (870° C), and it rises as you dig deeper. The mantle is thought to be solid rock, but seismic waves indicate that the lowest levels may be partly molten. When volcanoes spew out lava, or molten rock, it comes from Earth's core, all the way up through both the mantle and the crust.

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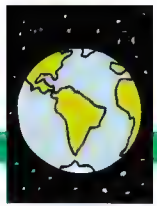
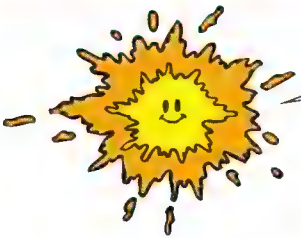
How hot is the center of Earth?



GEOGRAPHY



1. 540° F (300° C)
2. 5,400° F (3,000° C)
3. 54,000° F (30,000° C)

©1995 Nintendo

Earth Temperatures

Earth's core is 2,200 miles (3,540 km) down from its surface. Up here, we're accustomed to temperatures of 0° to 104° F (-18° to 40° C). Deep into Earth's core it is believed to be 5,400° F (3,000° C)!

2 The temperature of Earth's center, or core, is 5,400° F (3,000° C).

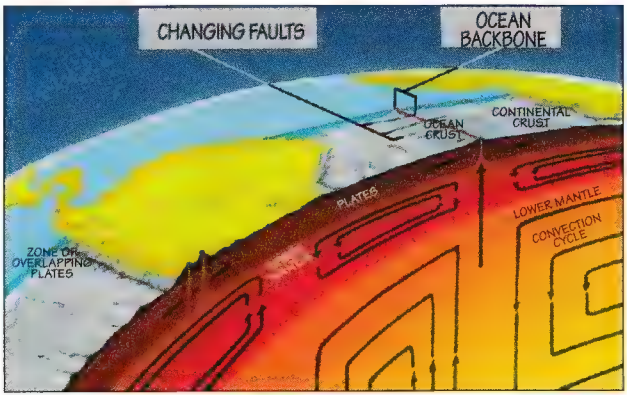


Illustration © Y. Tabaries

The movement of the mantle's convection currents caused the shaping of lands and oceans.

How do scientists know how hot Earth's core is? Did anyone go down there with a thermometer? No, depth and temperature figures result from calculating Earth's density, plus seismic readings that show the underground path of earthquake shock waves.

Layers of Heat

Earth's upper mantle, a layer of rock surrounding the core, is 1,600° F (870° C); the lower mantle is between 4,082°-4,582° F (2,250°-2,500° C). Heat from the core's magma, or molten rock, provides energy for the mantle's huge convection currents, in which cooler areas constantly move toward warmer ones. This motion moves faults in the plates that form Earth's surface, shaping the continents, islands, and seas.

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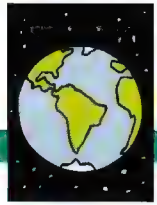
In which country would you find Andalusia?



GEOGRAPHY

1. Italy
2. Spain
3. France

©1995 Nintendo

Spain

Andalusia spreads out over 33,695 square miles (87,260 sq km) of southern Spain, bordered on the west by the Atlantic Ocean and on the east by the Mediterranean Sea.

2 Andalusia is a province in Spain.

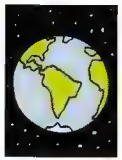


Illustration © Y Tabarés

The region of Andalusia makes up more than a sixth of all Spain.

Spain, checkered by mountains and plateaus, is unlike any other country. It's warm and cool, flat and mountainous. In fact, Spain is second only to Switzerland in its hilliness. In Andalusia, there are peaks like the 11,407-ft (3,477-m) Mulacen, highest peak in mainland Spain.

Weather Changes

In a country so divided by mountains, plateaus, and valleys, climate varies. It is mainly dry, with cold winters and hot summers, especially in the Meseta plateau that forms most of the country's interior. Vegetation is often lacking, except along the Atlantic coast to the north, where ocean sprays supply the humidity to grow trees and grasses. In the capital, Madrid, temperatures vary from about 9° F (-13° C) in winter to 111° F (44° C) in summer. Southern and eastern coasts have a Mediterranean climate. In Andalucia, beaches are filled with tourists who come for fun in the sun!

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Which are Europe's largest mountains?

GEOGRAPHY

1. The Pyrenees
2. The Carpathian
3. The Alps

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Alps

The Alps form an enormous arc 750 miles (1,200 km) long and 30-160 miles (48-260 km) wide from the Mediterranean Sea across France, Italy, Liechtenstein, Switzerland, Germany, Austria, and the former Yugoslavia.

3 The Alps are Europe's largest mountains.

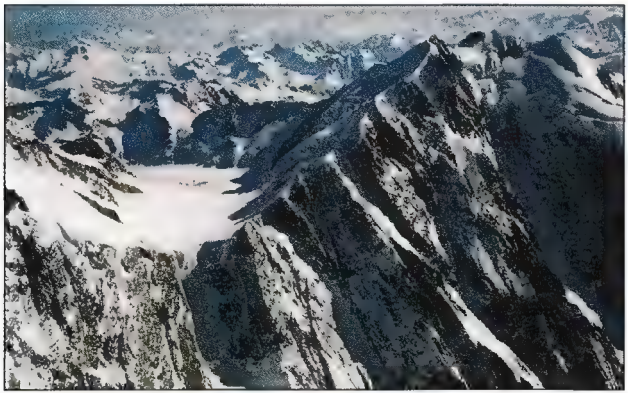

Photo © L. Jahan / Explorer

This aerial view of the Alps includes Mont Blanc. At 15,777 feet (4,809 m), Mont Blanc is the highest peak.

History of the Alps

The Alps didn't always have snow-capped peaks and peaceful valleys as they do today. First one massive rock arose from the soil some 300 million years ago. Over a few hundred million years, erosion by wind, rain, and snow wore away parts of the rock. Then Earth's seas rose and covered the huge rocky mass, depositing sediment. Millions of years later, the Alps emerged, only to be covered again, this time by gigantic glaciers. As the glaciers receded, they dug out lakes and deep valleys in the mountains.

The Alps Today

Today there are tunnels and roads that allow tourists to reach even the most remote areas of the Alps to take part in mountain climbing, skiing, or sightseeing.

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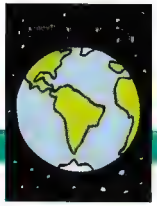
How many continents are there?



GEOGRAPHY

1 Five

2 Seven

3 Nine

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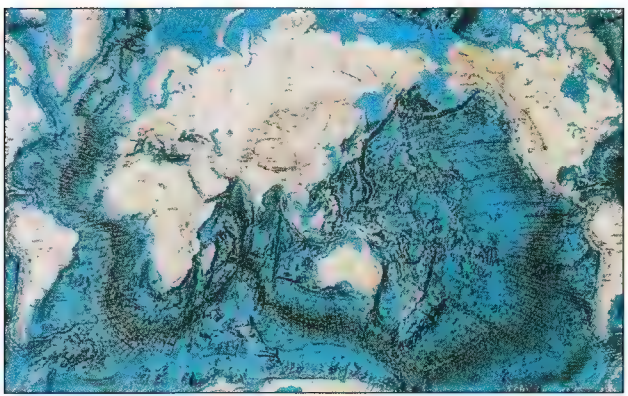
Continents

A continent is a large body of land. The world has seven continents: Africa, Antarctica, Asia, Australia, Europe, North America, and South America.

2 There are seven continents in the world.



© D. R.

The continents cover less than 25 percent of Earth's surface.

Geologists believe that about 300 million years ago all seven continents were joined together in one huge supercontinent. They call it Pangaea, from a Greek word meaning "all lands."

The Big Breakup

About 200 million years ago, Pangaea began to break up into two parts: Laurasia (Europe, North America, Greenland, and Asia) and Gondwanaland (South America, Africa, India, Australia, and Antarctica). Over the next 130 million years, Laurasia and Gondwanaland also broke apart when the constantly moving plates of Earth's crust pushed and pulled land masses in different directions. Within the last 40 million years, two of the world's great mountain ranges, the Alps and the Himalayas, were formed as continental plates collided.

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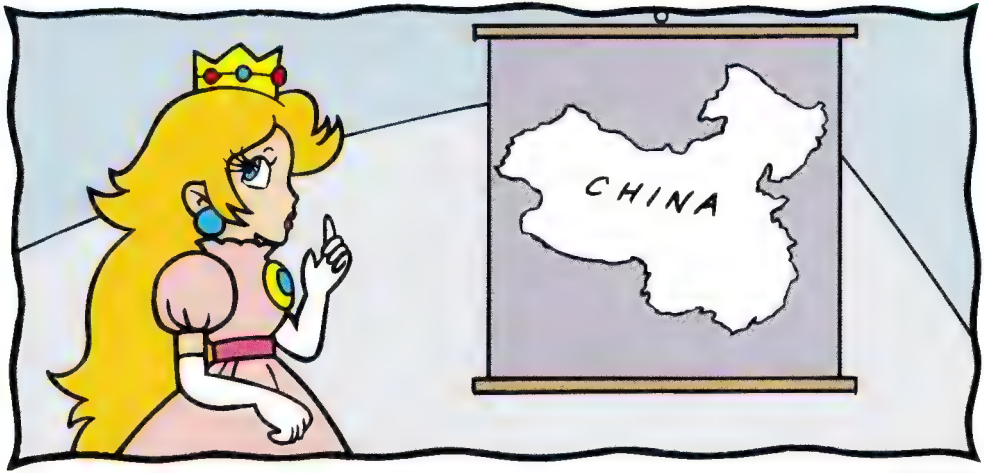
Which is the capital of China?

GEOGRAPHY

1 Beijing
2 Canton
3 Shanghai



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Beijing

Beijing, once known as Peking, has been China's capital since the early days of the Ming Dynasty (1368-1644). The city is famous for beautiful palaces and temples, and the high walls and gates of Tiananmen Square.

1 Beijing is the capital of China.

© Geopress / Explorer

In 1989, 100,000 Chinese students held a protest in Tiananmen Square that was seen around the world via TV.

Tiananmen Square, an almost 100-acre (40-hectare) plaza, was named for the gate at its north end, Tiananmen, or "Gate of Heavenly Peace." Built in 1651, the gate is 110 feet (33 m) high and has five passageways, each with a bridge over a moat.

Around the Square

The wall at the opposite end of the square includes Qianmen Gate, which leads to the Imperial City and the Old Forbidden City. The top of the wall was wide enough for royal guards to patrol on horseback. The Communists took over China in 1949, and around the square are monuments of their rule, such as the Great Hall of the People, Museum of Chinese Revolution, Monument to the People's Heroes, and Chairman Mao Memorial Hall.

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How fast does an avalanche travel?

GEOGRAPHY

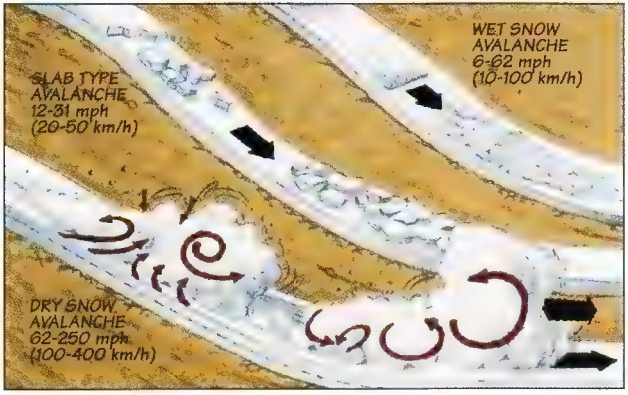
1. More than 50 miles (80 km) per hour
2. More than 75 miles (121 km) per hour
3. More than 100 miles (160 km) per hour

©1995 Nintendo

Avalanches

Avalanche is French for "to swallow." As a huge mass of snow and ice travels down a mountain at 100 miles (160 km) per hour, it does appear to swallow everything in its path!

3 **An avalanche travels down a mountainside at about 100 miles (160 km) per hour.**



© Y Tabarié

This illustration shows the movement of each avalanche type.

Avalanches occur because of the unstable nature of snow, especially on slopes with more than a 35° angle. A sudden change in temperature, vibration from a loud noise, or ground tremors, can start snow moving down the slope. The snow compacts and becomes icy, and picks up rocks along the way.

Three Avalanche Types

A dry snow avalanche of loose, powdery snow and air, moves the fastest. The wet snow type, made of wet, solid snow, moves slower. The slab type is a solid section of snow that breaks loose and splits into pieces as it slides.

Stopping Avalanches

To prevent avalanches, experts keep an eye on the snow cover and weather conditions. They also use explosives to reduce snow buildup and plant more trees on slopes as barriers.

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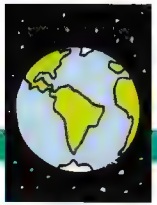
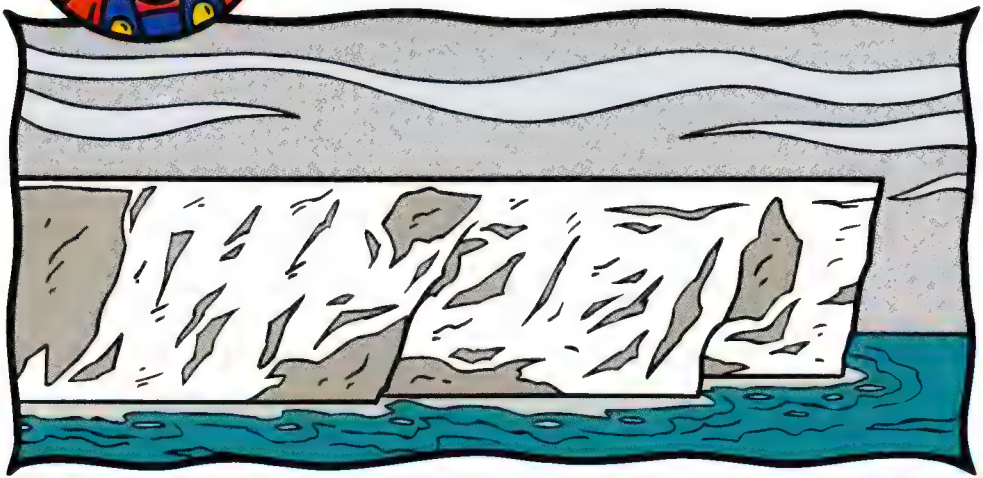
How do glaciers form?



GEOGRAPHY

1. From piles of unmelted snow
2. From volcanic eruptions
3. From melting rivers of snow

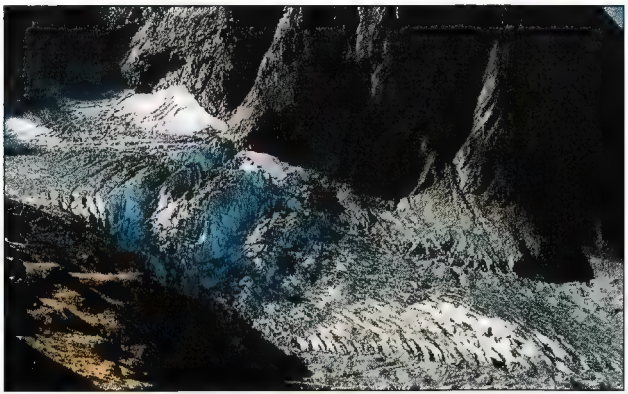


©1995 Nintendo

Glaciers

In some regions more snow piles up each year than melts. As new snow piles on top, the old snow refreezes as dense, rough ice called firn or névé. When the firn becomes 160 feet (50 m) thick, it's a mass of solid ice—a glacier.

1 Glaciers form when new snow buries piles of unmelted snow.



© Potter / Sipa Press

This photo clearly shows why glaciers are called "rivers of ice."

There are three kinds of glaciers: Alpine or valley, continental, and piedmont. Alpine glaciers form on mountainsides and move downward through valleys. Continental glaciers spread out in all directions to cover immense areas, including a large part of Antarctica and Greenland. Piedmont glaciers, like Alaska's Bering glacier, are found in mountain lowlands.

Our Changing Earth

Even though they're solid, glaciers move slowly over land, picking up and carrying large amounts of rock—some boulders as big as houses—that grind and rake the ground, forming dramatic and craggy landscapes. The jagged peak of the Matterhorn in Switzerland and the valleys of Yosemite in California are products of glacial movement.

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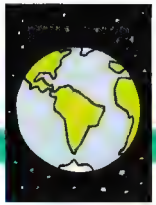
Where is Easter Island?



GEOGRAPHY

1. In the Atlantic Ocean
2. In the North Sea
3. In the Pacific Ocean

©1995 Nintendo

Easter Island

On Easter Sunday, 1722 a Dutch ship captain named Jacob Roggeveen discovered a remote island in the Pacific. He named it Easter Island in honor of the day.

3 **Easter Island is in the Pacific Ocean, 2,300 miles (3,700 km) west of Chile.**

© T. LaPenna / Spa Press

The 5th century inhabitants of Easter Island used stone hand picks to carve the faces out of rock from extinct volcanos.

How remote was Easter Island? It's reported that people who lived there in the 18th century thought their nearest neighbors lived on the Moon!

Silent Statues

More than 600 enormous stone statues are scattered across Easter Island. They were carved hundreds of years before Roggeveen arrived, and no one seemed to know why. Today, archaeologists believe the island was inhabited by American Indians or Polynesians in 400 A.D. Those people, they say, carved the heads from volcanic rock, possibly to honor their ancestors.

Island Mystery

Most of the Easter Island statues are 11-20 feet (3.4-6 m) tall and weigh up to 90 tons (82 metric tons). Some are twice that size. So, how did the islanders move each statue into place? Some people theorize that the natives had help…from outer space!

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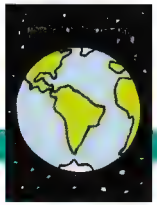
Which are types of rocks?



GEOGRAPHY

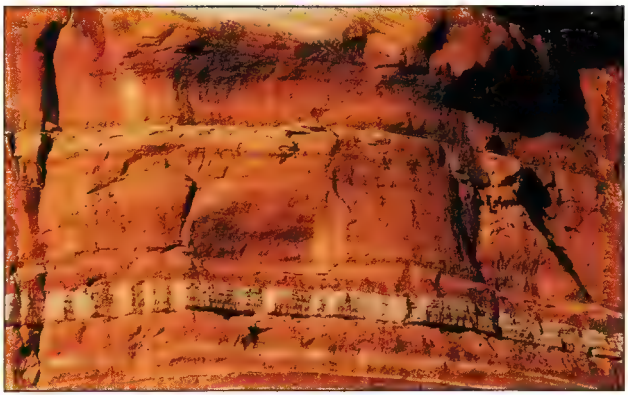
1. Sedimentary, rococo, metabolic
2. Sedimentary, igneous, metamorphic
3. Sedimentary, inflorescent, mulsified

©1995 Nintendo

Sedimentary Rocks

Rock is the solid material that makes up Earth's crust. There are three basic kinds of rock: igneous, sedimentary, and metamorphic. Each formed differently over time.

2 Sedimentary, igneous, and metamorphic are the three main types of rocks.



© Michael Long / Visuals Unlimited

Sedimentary rocks have characteristic layers or strata. Each layer gives clues about life on Earth at the time the sediment was deposited.

Igneous rocks formed from a volcano's molten magma or from lava—magma once it reaches Earth's surface. Sedimentary rocks formed from condensed sand, mud, and the remains of plants and animals. Metamorphic rocks formed from igneous or sedimentary rocks that were changed by heat and pressure inside Earth.

Rocks of Erosion

Long ago, rocks on Earth's surface were eroded by wind, rain, and ice, and broke into tiny pieces or sediment. The wind, rain, and ice spread the sediment, along with the remains of plants and animals, over large areas. This material built up in layers and after millions of years the layers hardened into rock. About two-thirds of Earth is covered with sedimentary rocks that contain fossils and fossil fuels, such as coal, oil, and natural gas.

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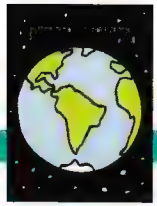
What is the highest point in the Alps?



GEOGRAPHY

1. The Matterhorn
2. Mont Bleu
3. Mont Blanc

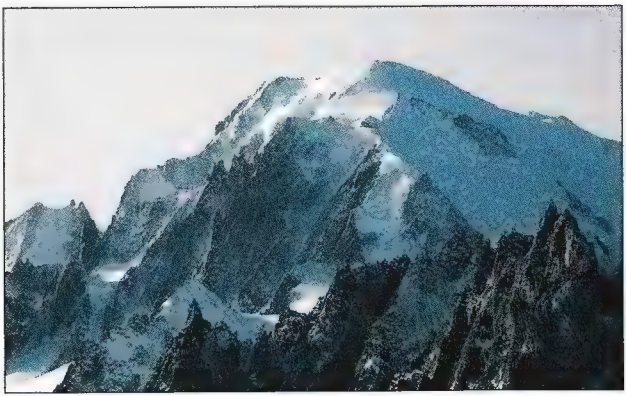
Illustration Gary Fields

©1995 Nintendo

Mont Blanc

At 15,771 feet (4,807 m) above sea level, Mont Blanc is the highest point in the Alps and one of the highest peaks in Europe—only Mont Elbruz, at 18,510 feet (5,642 m), is higher.

3 **Mont Blanc is the highest point in the Alps, Europe's largest mountain chain.**



© L. Maquet

The top of Mont Blanc is covered with a cap of ice.

Mont Blanc is on the borders of France, Italy, and Switzerland. In 1965 a 7.5-mile (12 km) highway tunnel was built through the mountain's base, linking France and Italy.

Science and the Alps

In the 1700s, scientists began studying the animals, plants, and landforms of the Alps. This led to the 1786 climb of Michel G. Paccard, a French doctor, and Jacques Balmat, his guide, the first people to reach the summit of Mont Blanc. As they made their record-setting climb, they recorded scientific observations at various altitudes. In the 1800s, geographer Joseph Vallot, built a scientific observation post below Mont Blanc's peak and made important studies of its glaciers. Later, scientists tried to build a laboratory on the summit but their equipment sank in the unstable glacier cap!

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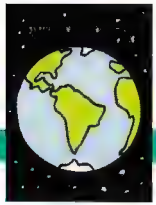
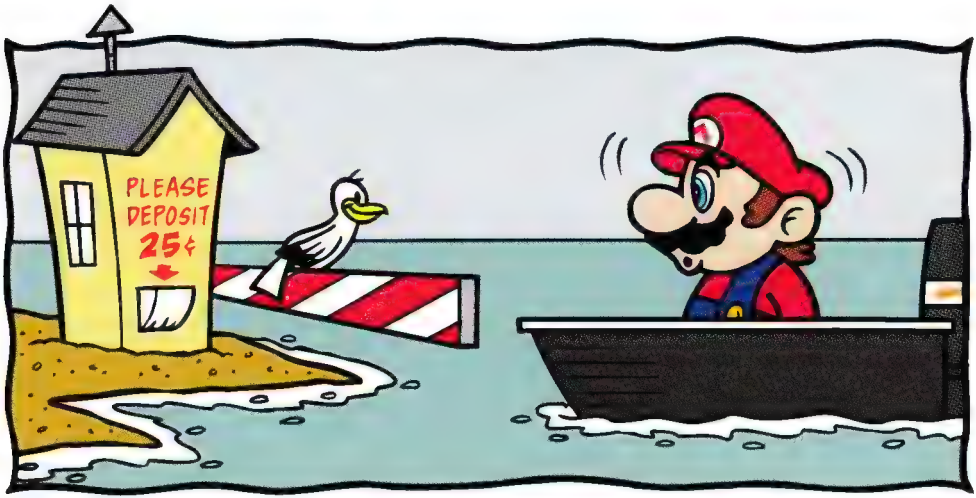
What is an atoll?



GEOGRAPHY

1. A colorful light in the polar sky
2. A coral reef circling a lagoon
3. A depression in Earth's surface



Illustration, Gary Fields

©1995 Nintendo

Atolls

Looking like a ring-shaped island or group of islets, atolls are found mostly in tropical waters. They enclose lagoons, but channels or breaks through the atolls link the lagoons to the open sea.

2 An atoll is a coral reef that surrounds a lagoon.

© E. Valentin / Hoa Qui

Inside this atoll, a sandy beach and coconut palms border the calm waters of a lagoon connected to the sea by channels.

Atolls form only in areas with undersea volcanoes. When a volcano erupts on the ocean floor, lava piles up. Over time, and after more eruptions, it piles up enough to break the surface of the water to become an island. The next step in an atoll's formation depends on tiny sea creatures called coral.

Building an Atoll

Coral secrete calcium carbonate (limestone) skeletons. As they die, their skeletons pile up with living coral to form a limestone reef that surrounds the island. Over millions of years, the volcano erodes and, because of its great weight, sinks into the sea. Only the ring-shaped coral reef remains. Ocean waves break off bits of the reef, grinding them into sand The sand and other material carried by waves, piles up on the reef and in time forms an island or islets.

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When did the last ice age end?

GEOGRAPHY

1. About 20,000 years ago
2. About 10,000 years ago
3. About 5,000 years ago

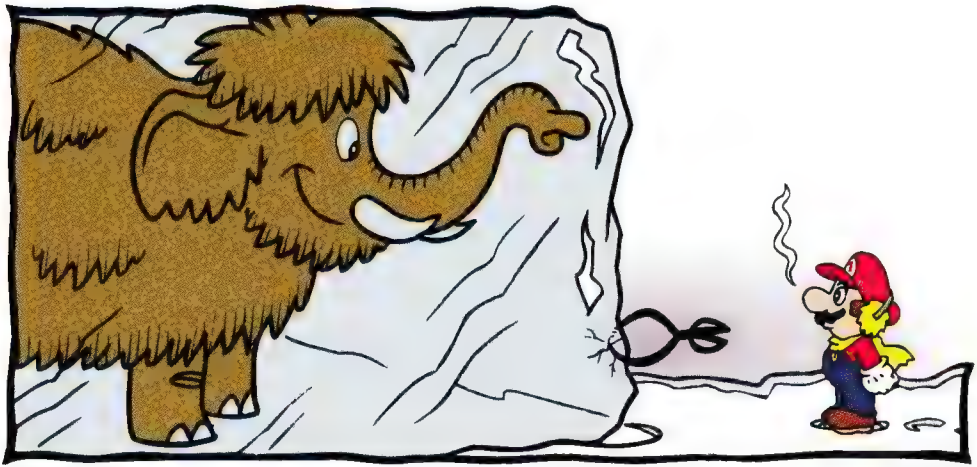

Illustration: Gary Fields

©1995 Nintendo

Ice Ages

An ice age is a long period of cold climate in which glaciers cover parts of the world. Most geologists believe the last ice age ended about 10,000 years ago, when the glaciers retreated to their present sites at the North and South poles.

2 The last ice age ended in prehistoric times, about 10,000 years ago.

© C. Geyres / Sipa Image

As glaciers retreat, they change the surface of the land by carrying along rocks, soil, and other materials and depositing them elsewhere.

There have been many ice ages in the past 500 million years; the last began about 80,000 years ago. Geologists say if our global average temperature dropped only 4°F (2°C), it could indicate that a new ice age has begun. But other geologists believe the last ice age isn't over yet because there are still glaciers at the poles and elsewhere.

Ice-Covered Land

During the most recent ice age, glaciers covered about one-third of Earth's surface. That included most of Canada, northern Europe and Russia, the northern U.S., Antarctica, and parts of South America. As the climate became warmer, the glaciers retreated, carving out rugged landscapes on the way.

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Do glaciers move?

GEOGRAPHY

1. Yes, they move under their own weight.
2. No, they always remain in the same spot.
3. Yes, but only uphill.

Illustration Gary Fields

©1995 Nintendo

Glacial Motion

Glaciers form in places where huge amounts of snow build up and turn to ice—most glaciers are from 300 to 10,000 feet (91 to 3,050 m) thick. Eventually they move under the pressure of their own weight.

1 **Glaciers move slowly down valleys or depressions, carried along by their own weight.**

© L. Maquet

In 1850, this glacier in Argentina moved very close to villagers' homes.

Gravity pulls a glacier downhill. Pressure from surface ice also causes crystals deep in the glacier to slide over one another, and soon the whole ice mass is moving. Friction with the ground causes ice at the base of the glacier to melt and refreeze, helping it slide. Most glaciers move less than 1 foot (30 cm) a day, but some move faster—more than 50 feet (15 m) a day. Glacier parts move at different speeds. Upper and center areas move the fastest; the bottom and sides move more slowly because they rake across the ground as they go. To measure a glacier's speed, geologists drive stakes into the ice at different spots and record changes in position. When the glacier reaches the sea, huge chunks fall off to become icebergs.

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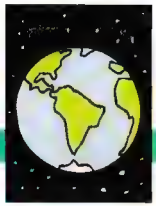
Where is Monument Valley?



GEOGRAPHY

1. Texas and Mexico
2. Vermont and New Hampshire
3. Arizona and Utah

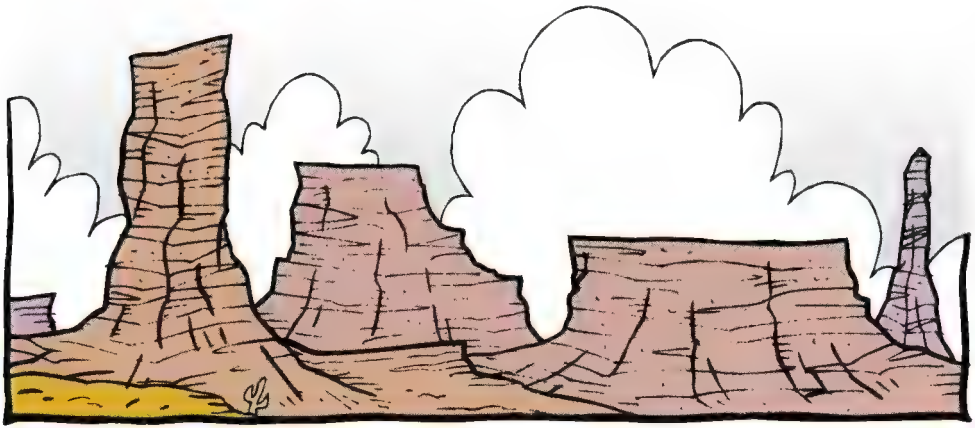


Illustration: Gary Fields

©1995 Nintendo

Monument Valley

This rugged terrain has been the setting for many famous western movies including *Stagecoach* and *How the West Was Won.*

3 Monument Valley is a collection of natural rock formations spanning the border between Arizona and Utah.

© P. Moxo / Sunset

You've probably seen the red buttes of Monument Valley before—in the background of your favorite western movie.

Craggy, red sandstone pillars, called buttes, rise from the hot, dry desert of Monument Valley. From a distance, the natural rock formations look like the ruined columns of an ancient temple or monument. That's how the valley got its name. Each monument has a name as well. The tallest is a bluish volcanic rock called Agathla Peak. Some of the buttes have Indian names, some are named for explorers or prospectors who worked and traveled in the area, and some were named for their shapes. Imagine what Bear and Rabbit, Stagecoach, Castle Rock and Big Indian Butte look like.

Navajo Country

Monument Valley is part of a 25,000-square-mile (40,000 sq. km.) Navajo Indian reservation that spans the Utah-Arizona border. Before the Navajo settled in the area, the Anasazi Indians, an ancient tribe of the Southwest, lived here.

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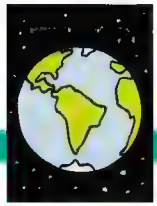
Which is Europe's busiest river?



GEOGRAPHY

1. The Loire
2. The Rhine
3. The Seine

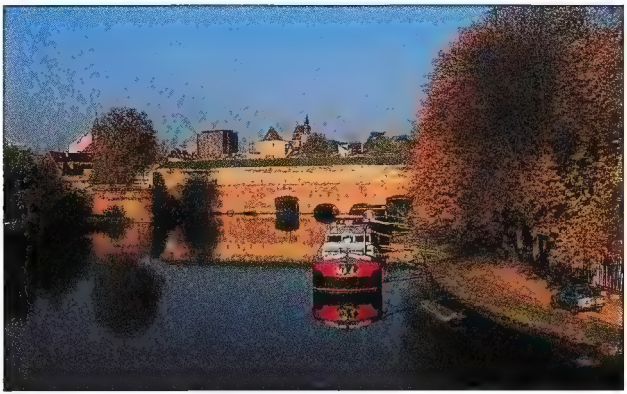
Illustration: Gary Fields

©1995 Nintendo

Rhine River

Beginning in the Alps in Switzerland, the Rhine flows about 865 miles (1,390 km) to the North Sea.

2 The Rhine River is the busiest river in Europe.



© Valentin / Hou Qui

Barges travel up and down the Rhine River carrying cargo and passengers between Europe's inland nations.

The Rhine forms most of Switzerland's borders with the countries of Liechtenstein, Austria and Germany, and part of the border between France and Germany. In ancient times, the natural barrier of the Rhine kept the Gauls, in what is now France, and the Germanic people from constant wars. Crossing the river was difficult and time-consuming for these ancient warriors, so tribes usually kept to their own sides of the river.

International Trade

Because most of the Rhine countries are inland—not bordered by an ocean or sea—the Rhine River is an important shipping route for them. Cargo vessels arrive at North Sea ports and unload their goods onto barges which then head down the Rhine to deliver their goods. The Rhine is used for shipping coal, petroleum, metallic ore, and grain. Major ports on the Rhine include Rotterdam in the Netherlands—one of the largest ports in Europe—Basel, Switzerland; Strasbourg, France; and Cologne, Germany.

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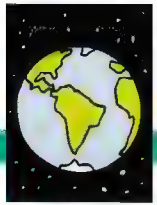
Which is the largest city in the U.S.?



GEOGRAPHY

1. Los Angeles
2. Chicago
3. New York

Illustration: Gary Fields

©1995 Nintendo

New York

With 7.3 million residents, New York City is home to more people than any other city in the U.S. It has more inhabitants than the states of Massachusetts and New Hampshire combined!

3 New York is the most populous city in the U.S.

© P. Wallet / Hoa-Qui

The Brooklyn Bridge in New York City connects the boroughs of Manhattan and Brooklyn.

When people think of New York City, most picture the borough of Manhattan with its skyscrapers, grand hotels and restaurants, and busy, crowded streets. But New York City is made up of five separate counties, called boroughs. They are Bronx, Brooklyn, Manhattan, Queens and Staten Island. Two rivers run through the city. The Hudson River separates New York from New Jersey on the west, and the East River separates Manhattan from Queens and Brooklyn.

Famous Landmarks

New York is known for its skyscrapers, very tall buildings that seem to scrape the sky. The most famous of these are the Empire State Building and the twin towers of the World Trade Center. New York's other renowned landmarks include the United Nations building and the Statue of Liberty, which stands on Liberty Island in the Hudson River.

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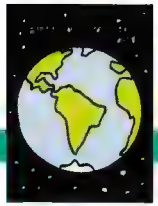
Which countries make up Great Britain?



GEOGRAPHY

1. England, Scotland and Wales
2. England, Italy and France
3. England, Northern Ireland and Iceland

Illustration: Gary Fields

©1995 Nintendo

Great Britain

Great Britain is a single island which comprises three countries: England, Scotland and Wales. All three countries are ruled by the British government.

1 England, Scotland and Wales are the countries of Great Britain.

© P. De Wilde / Hoa Qui

Great Britain is an island. Frequent rains keep the land lush and green.

Northern Ireland and the surrounding islands—Isle of Wight, the Shetlands, the Orkneys, the Hebrides and the Scilly Islands—are also ruled by the British government. Together the nation is known as the United Kingdom (U.K.). All U.K. territories and districts are represented in the British Parliament; similar to the U.S. Senate and House of Representatives. The U.K. is ruled by a monarch—a king or queen—but today the monarch doesn't have absolute power. The head of the British government is the prime minister, and he or she, together with elected officials, determine national policies.

Our Founders

Before the American Revolution, Great Britain ruled our country, and British influence is still felt in the U.S. We speak English, and, as in Great Britain, our major religion is Protestantism. One thing we didn't adopt are the British rules of the road. In Great Britain car steering wheels are on the right and drivers keep to the left side of the road.

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Which is the only human construction visible from the moon?

GEOGRAPHY

1. The White House in Washington D.C.
2. The Great Pyramid of Egypt
3. The Great Wall of China

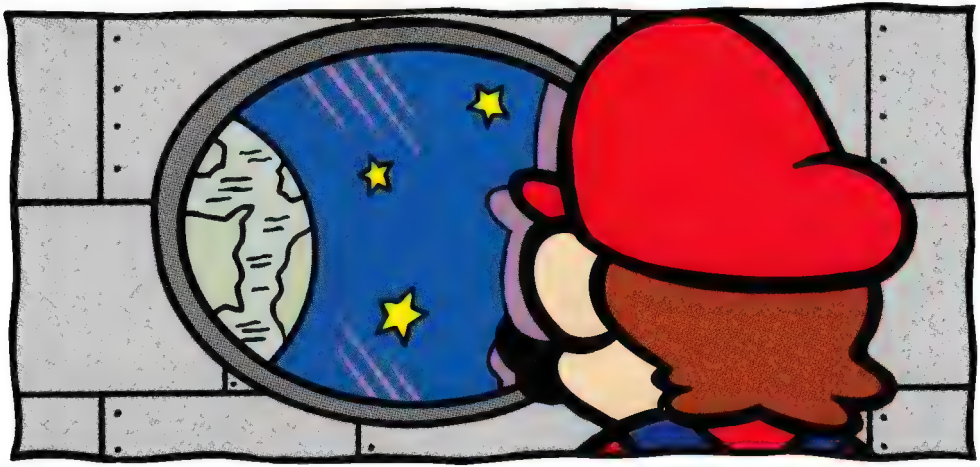

Illustration Gary Fields

©1995 Nintendo

The Great Wall

The Great Wall was the only human construction astronauts on the moon saw amid Earth's visible landforms and oceans.

3 **According to astronauts who saw it, the Great Wall of China is the only human construction visible from the moon.**

© Bousquier / Sipa Press

For hundreds of years the Chinese were safe inside the Great Wall, where guards patrolled 24 hours a day. But in the end, the winding stone structure couldn't prevent an invasion by the Mongols.

China's Great Wall is a stone structure winding for 4,000 miles (6,400 km) over mountains and through deserts, from near the coastline to north-central China. It's the longest structure ever built by humans, and the first and last example of a wall surrounding an entire country.

The Walled Country

The Great Wall was begun in the 3rd century B.C. by the Qin dynasty emperor, Shi Huangdi, who hoped to protect his country from invasion. More than 300,000 peasants worked on the stone border, building 40-foot- (12-m-) high watchtowers every 100-200 yards (91-180 m) so guards could spot approaching enemies. Unfortunately, even the Great Wall couldn't stop the Mongols and their leader Genghis Khan, who in the 13th century conquered China, wall and all. Today, the Great Wall is a popular tourist attraction.

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Where is the Forbidden City?

GEOGRAPHY

1. In Rome, Italy
2. In Beijing, China
3. In Moscow, Russia

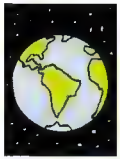
Illustration: Gary Fields

©1995 Nintendo

The Forbidden City

Beyond the wall of Tiananmen Square in Beijing lies the Forbidden City, so called because for years everyone but the emperor's family and staff were forbidden to enter.

2 The Forbidden City is part of the city of Beijing, China.



© E. Valentin / Hoa Qui

The palace is situated on terraces and surrounded by gardens and parks with colorful trees and shimmering lakes.

The Forbidden City includes the palace and grounds, meeting halls and offices, and about 900,000 precious objects. It was home to China's emperor, whom the people called "Son of Heaven." He didn't claim divine ancestry as the emperor of Japan did. To the Chinese, Heaven was the principal divinity, who could choose a human to govern the world in his name.

Safe Behind Walls

The Forbidden City, built between 1406 and 1420, was the center of the Chinese Empire. It is a beautiful example of traditional Chinese architecture from its expanses of white marble steps to its gold-tiled roofs. Here the emperor, his family and thousands of servants lived in secure, guarded comfort. In 1949, the Communists took over China. Then the Forbidden City was open to anyone. Today the Forbidden City is a museum.

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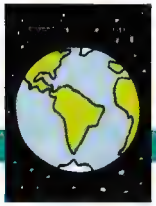
Which is the longest river in China?



GEOGRAPHY

1. The Yangtze
2. The Amazon
3. The Chinook

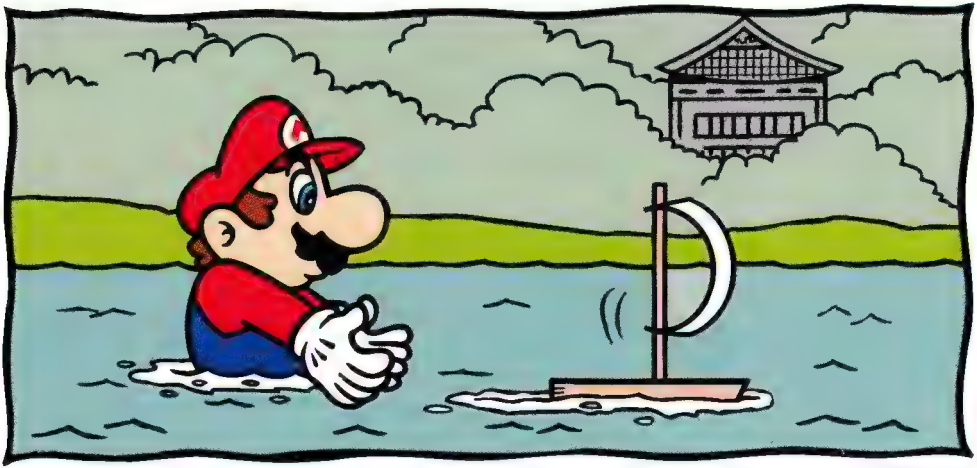


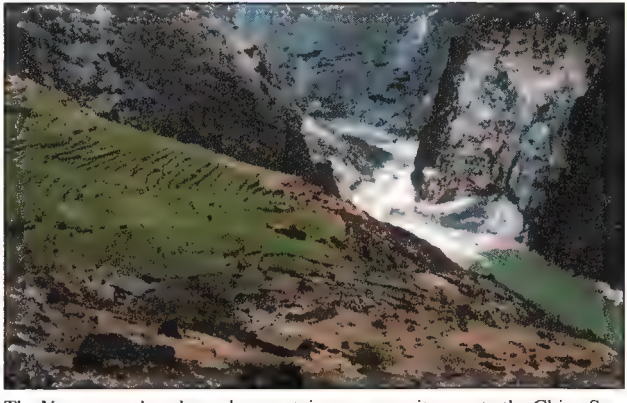
Illustration: Gary Fields

©1995 Nintendo

Yangtze River

The Chinese call the Yangtze River "Chang Jiang," or "long river." It begins in the Tanggula Mountains, about 16,000 feet (4,880 m) above sea level, and flows 3,915 miles (6,300 km) to the East China Sea.

1 The Yangtze, also called the Yangtze Kiang, is China's longest river.



© Tronsy / Hua-Qun

The Yangtze rushes through mountain gorges on its way to the China Sea.

Because the Yangtze, the world's third longest river, begins in the mountains, its waters move swiftly for most of its journey to the sea. Great gorges along the river's upper portion make it one of the world's most beautiful rivers. At some points along the mountain route the river's banks are over 1 mile (1.6 km) high.

Life on the River

Some important Chinese cities border the Yangtze, like Shanghai and Nanjing, and people travel there by boat. But the river isn't just used for transportation, it's also home to thousands of Chinese who live on boats called junks. Several million more Chinese live along the banks of the Yangtze. Sometimes a summer flood drives them from their homes, but as soon as the river recedes, they move back.

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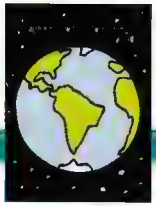
Where is the Parthenon?



GEOGRAPHY

1. Rome, Italy
2. Cairo, Egypt
3. Athens, Greece

Illustration Gary Fields

©1995 Nintendo

Athens

The Parthenon stands on a hill called the Acropolis, overlooking the city of Athens. When it was built, between 447-432 B.C., the temple was dedicated to Athena, the city's patron goddess.

3 The Parthenon is the most famous ancient Greek temple in Athens.

© Frilet / Sipa Press

Architects and sculptors hired by Pericles built the all-marble Parthenon on the hill overlooking Athens. It's been damaged over the years, but it still towers over the city as it did centuries ago.

Athens, capital of Greece, was a city-state, consisting of the city itself plus the surrounding villages and farmland. A successful democracy, Athens reached its cultural height around 477 B.C., a time referred to as the Golden Age.

Government of the People

In Athens, every male had the right to serve in the assembly, the legal body which passed laws and determined government policy. The men drew lots to pick a 500-man committee responsible for running the day-to-day business of the city and paying its bills, with money paid by the people in taxes. Pericles was the leading statesman in Athens at the time the Parthenon was built. He hired leading architects and sculptors to built the giant marble building.

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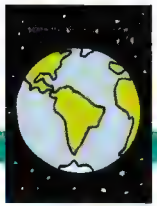
On which river is St. Louis, Missouri, located?



GEOGRAPHY

1. Hudson
2. Erie
3. Mississippi

Illustration Gary Fields

©1995 Nintendo

Mississippi

The Mississippi River, principal river of North America, is the longest in the U.S. It flows 2,348 miles (3,779 km) from its source, Minnesota's Lake Itasco, to its mouth in the Gulf of Mexico. It passes some major U.S. cities.

3 St. Louis, Missouri, is located on the Mississippi River.

© Geoigchtuck / Sunset

The Mississippi, the longest river in the U.S., flows past St. Louis.

The Mississippi River is also America's chief inland waterway. From Minneapolis, Minnesota, ships can travel downriver more than 1,800 miles (2,890 km) to the Gulf. The Mississippi's depth ranges from 9 feet (2.7 m) to 100 feet (30 m), and its widest point, at Cairo, Illinois, is about 4,500 feet (1,370 m).

River of History

The Mississippi has played a major role in U.S. history. Its waters provided a route for French and Spanish explorers in the 16th and 17th centuries. In the 1800s, when steamboats became common, the river was an important trade and transportation route. People found the Mississippi paddlewheelers much more comfortable, and much less tiring, than traveling by horseback or stagecoach.

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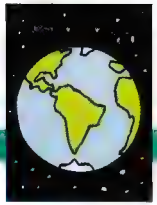
How many states are in the United States of America?



GEOGRAPHY

1. 48 states
2. 50 states
3. 52 states

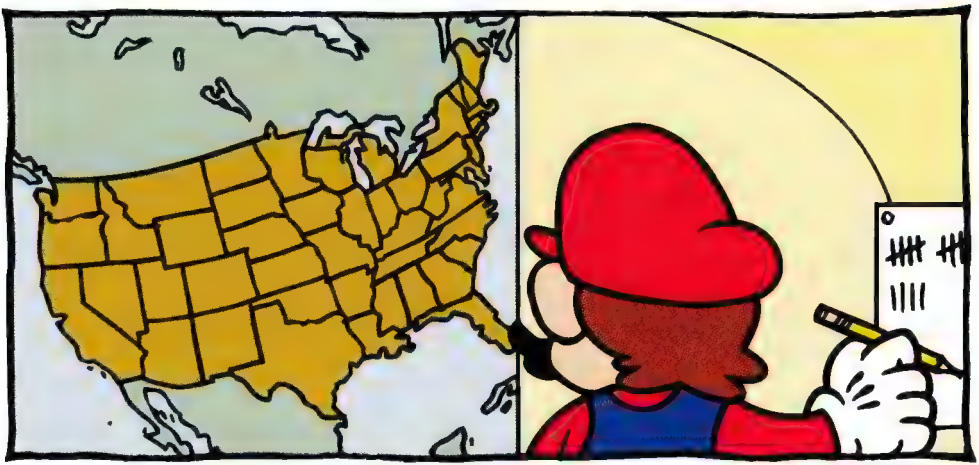


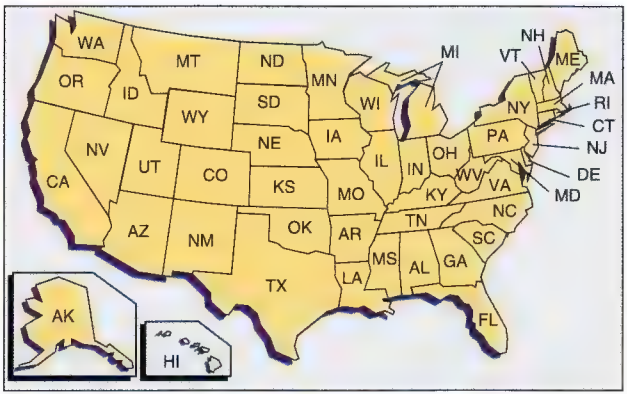
Illustration: Gary Fields

©1995 Nintendo

United States

The United States of America is the world's fourth largest country. It's made up of 50 individual states, 48 of which lie between Mexico and Canada.

2 The United States of America is made up of 50 states.



© Bob Italiano

The U.S. is a democracy in which the people elect the officials who run their cities, states, counties, and nation.

In the 1600s, Europeans began settling in colonies on the east coast of what is now the U.S. The colonists declared independence in 1776 and the new nation was born. The thirteen colonies became the first states: New Hampshire, Massachusetts, Rhode Island, Connecticut, New York, Pennsylvania, New Jersey, Delaware, Maryland, Virginia, North Carolina, South Carolina, and Georgia.

A Nation Grows

The U.S. Constitution, written in 1787, gave the government the power to allow new states to join the Union. In 1791, Vermont became the 14th state. As pioneers headed west, more states were added. The government bought some territories and fought for others that eventually became states. By 1912, when Arizona achieved statehood, the U.S. consisted of 48 states on the North American continent. In 1959, Alaska and Hawaii became the 49th and 50th states, the only ones not part of the continental U.S.

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D3 054 28-17

What is an ice floe?

GEOGRAPHY

1. Ice that comes out of a faucet
2. A flat expanse of floating ice
3. A jagged, pointed iceberg

Illustration: Gary Fields

©1995 Nintendo

Ice Floe

An ice floe is smaller than an ice field but has the same effect: it clogs harbors and other areas where shipping traffic needs to move. Ice-breakers must come to split the ice.

2 An ice floe is a flat expanse of floating ice.

© DeWilde / Hoa-Qui

This ice floe is attached to the shore, carried in by the current.

When winter comes to very cold regions, bringing icy winds and plunging temperatures, water in streams, rivers, and harbors freezes. Usually ice begins to form as a kind of slush floating on top of the water. But if it snows on top of the slush, blocks or floes of ice form and create problems for waterway traffic.

Crashing Out

Boats are sometimes unable to make it to a safe harbor before an ice floe forms, and can become frozen in the waterway between chunks of ice. Then specially equipped boats called ice-breakers, like those of the U.S. Coast Guard, are sent to free the trapped boats. Ice-breakers are equipped with extra heavy material on the front or bow of the craft, rather like a snow plow, and can ram and cut their way through very thick ice.

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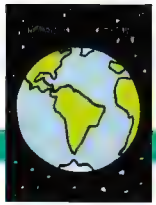
What is the largest river in India?



GEOGRAPHY

1. Nile
2. Rhone
3. Ganges

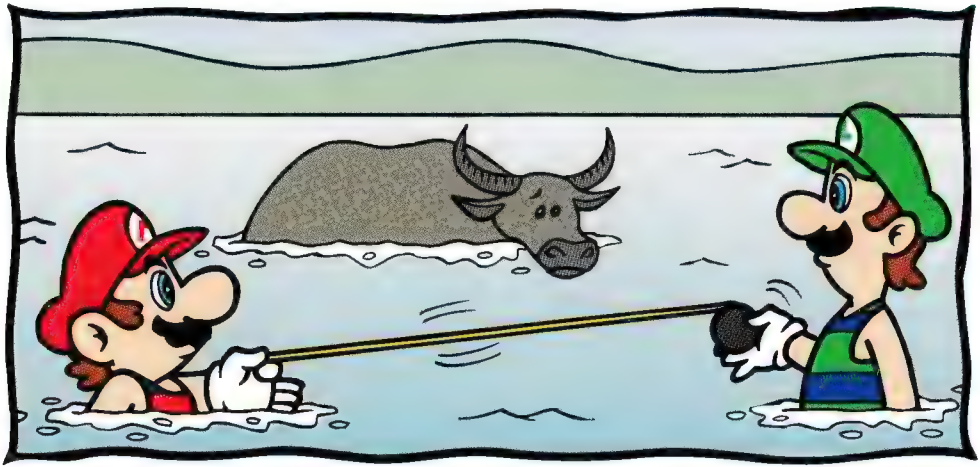


Illustration: Gary Fields

©1995 Nintendo

The Ganges River

The Ganges River, over 1,500 miles (2,400 km) long, is one of the longest rivers in the world. It begins in an ice cave high in the Himalayan mountains of Tibet and empties into the Bay of Bengal in Bangladesh.

3 The largest river in India is the Ganges.

© Frilet / Sipa Press

Thousands of people visit the sacred Ganges river every year.

Approximately 300 million people live in close vicinity to the Ganges river. That is more people than live in any country on earth besides China and India.

A Sacred River

The Ganges is considered the most sacred river in India by the members of the Hindu religion. Hundreds of religious temples can be found along the banks of the Ganges, each with a stairway leading to the waterfront.

It is believed that the water has blessing and curative powers. Some Hindus come to die in the Ganges because they believe that the river will transport them to Paradise. People who are ill or crippled come in hope that the sacred water will cure their ailments or make them well.

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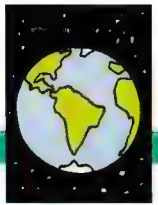
What country owns Greenland?



GEOGRAPHY

1. Denmark
2. Thailand
3. New Zealand

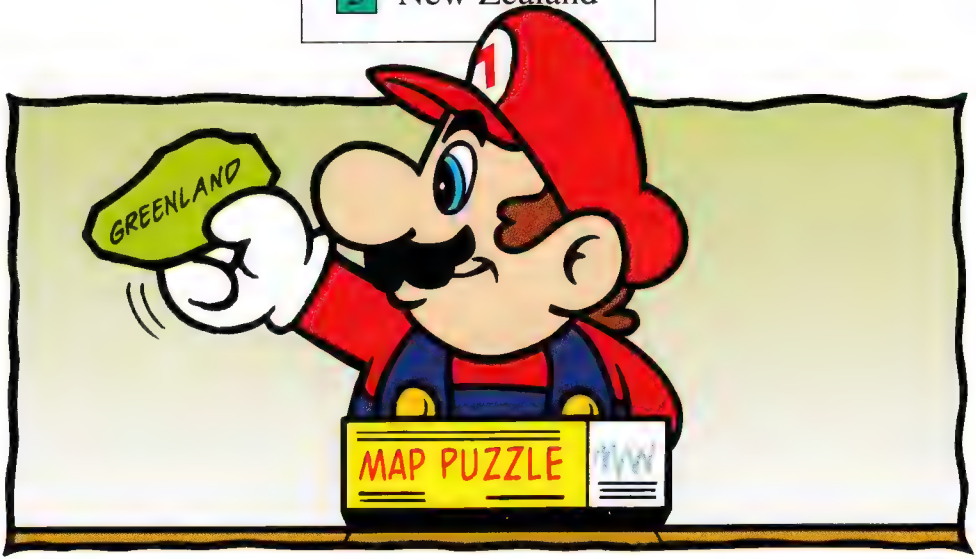


Illustration: Gary Fields

©1995 Nintendo

Greenland

Greenland is a huge island north of the United States. It has been the property of Denmark since 1814.

1 Greenland belongs to Denmark.

© P de Wilde / Hoa Qui

Traditional Greenlandish costumes are made with woven beads and are worn to celebrate the return of the sun in Spring.

Greenland is the biggest island in the world, measuring approximately 840,000 square miles (2,175,000 sq km). More than four-fifths of this island is buried under ice. Its major physical feature is the enormous ice sheet which has an average thickness of 5,000 feet (1,500 m) to more than 10,000 feet (3,030 m). Greenland is almost wholly within the Arctic Circle. Iceland is about 200 miles (320 km) to the southeast.

Only one percent of Greenland's surface is farmed, and the only plants grown are hay and garden vegetables. Fishing is Greenland's primary industry, and fish its number one export.

Population Profile

Eskimos began to migrate to Greenland around 3000 B.C. Today most of the population is concentrated along the rocky coast in the southwest, and almost four-fifths of Greenland's population are native Greenlanders. They are of Eskimo, or Inuit, extraction with European strains mixed in. Most of the others living in Greenland are Danish.

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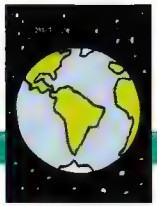
Which is the deepest lake in the world?



GEOGRAPHY

1. Lake Geneva
2. Lake Baikal
3. Lake Tahoe

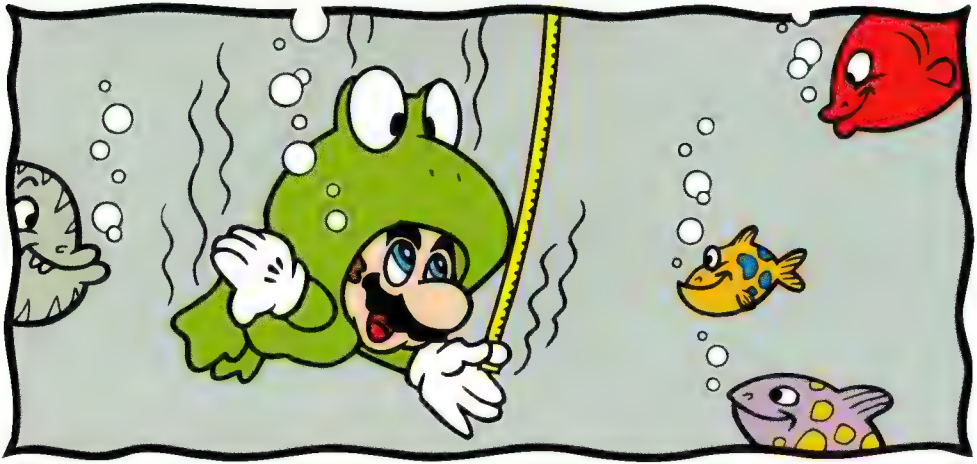


Illustration Gary Fields

©1995 Nintendo

Lake Baikal

Lake Baikal, the deepest lake in the world, is in southern Siberia. The average depth of this lake is over 5,300 feet (1,620 m). It's about 390 miles (630 km) long, and 20 to 50 miles (30 to 80 km) wide.

2 The deepest lake in the world is Lake Baikal in Siberia.

© Len Sirman

The first hot water springs ever discovered in a freshwater lake were found at the bottom of Lake Baikal in 1990.

Lake Baikal lies in Siberia just north of Mongolia, and is surrounded by the Baikal Mountains. The lake is fed by 336 rivers and streams.

Rich Lake

The word "baikal" means "rich lake," no doubt referring to the water's abundant plant and animal life. There are more than 2,600 species of plants and animals, and 50 species of fish in the freshwater lake. Among them are bullhead—a type of catfish—omul salmon, lake whitefish, and Siberian sturgeon. Sturgeon can grow up to six-and-a-half feet (2 meters) long. The only mammal native to this area is the Baikal seal. Mining for mica and marble, paper production, shipbuilding, fisheries, and timber are among the primary lake shore industries. Because of the pollution caused by these industries, environmental laws have been enacted to protect Lake Baikal.

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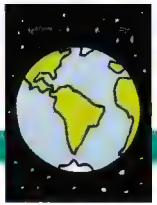
What is a canyon?



GEOGRAPHY

1. Something you draw with
2. A geological phenomenon
3. A tropical tree

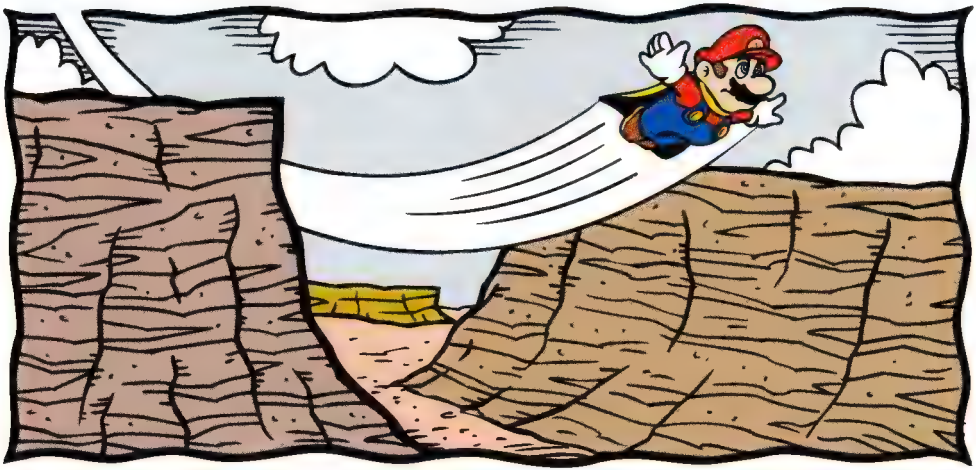


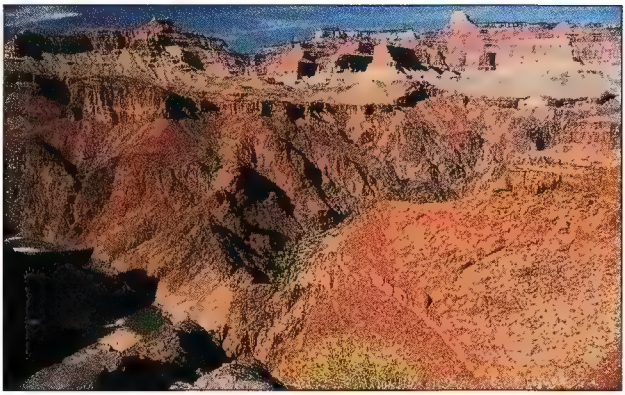
Illustration. Gary Fields

©1995 Nintendo

Canyon

A canyon is a steep-walled, V-shaped gorge cut through dirt and rock by a river. "Canyon" comes from the Spanish word "cañon," meaning "tube."

2 A canyon is a geological phenomenon.



© C. Farhi / Hua Qui

The Colorado River snakes its way through the Grand Canyon.

The biggest canyon in the world is the Grand Canyon in northwestern Arizona. It was created by the weathering and eroding action of the Colorado River. For millions of years the river has flowed through this area, carrying little pieces of rock along with it. This has the same effect on the walls of the Grand Canyon as sandpaper would have on wood. Slowly but surely the water and bits of rock wear away the canyon walls. The bits and pieces of rock are deposited further downstream where the river runs more slowly.

Nature's Palette

The Grand Canyon is known for its spectacular colors and rock formations. Various shades of red dominate the color scheme but rock strata (layers) are gray, light green, brown, and even violet. The combination of high peaks, buttes, ravines, cliffs, and valleys give this canyon its reputation as one of Nature's most magnificent sculptures.

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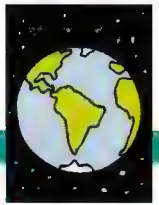
Where is the Fujiyama volcano found?



GEOGRAPHY

1. Sicily
2. Washington State
3. Japan

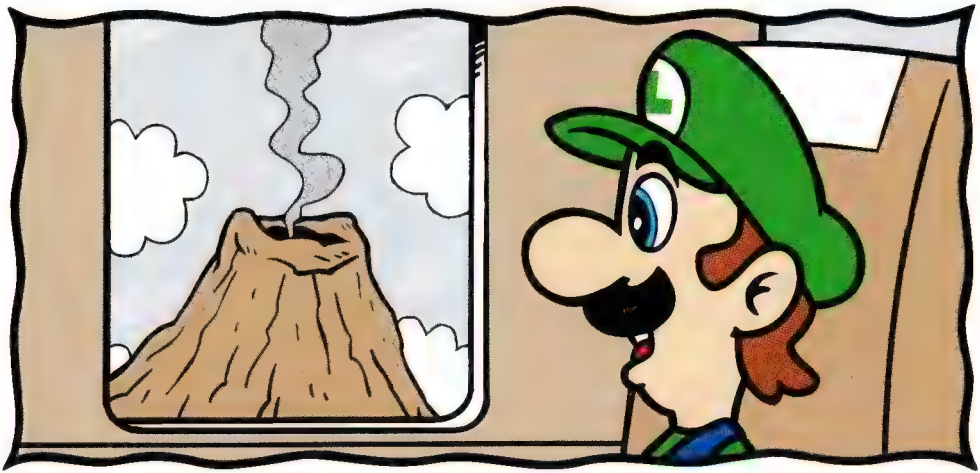


Illustration: Gary Fields

©1995 Nintendo

Mount Fujiyama

Mount Fujiyama is located in the Fuji-Hakone National Park on Honshu, the largest island of Japan. The mountain is near the Pacific coast, 83 miles (100 km) southwest of Tokyo.

3 The Fujiyama volcano is in Japan.

© Leo Sirman

The Japanese have worshiped Mount Fuji-Yama for centuries. It's believed to represent the goddess of fire, and to be the home of the gods.

Mount Fujiyama, also called Mount Fuji, is the highest mountain in Japan measuring 12,389 feet (3,776 m). At its base this volcanic mountain measures 78 miles (126 km). The volcano is believed to have been formed by an earthquake in 286 B.C. The last eruption of this dramatic volcanic mountain took place in 1707.

Traditionally, the Japanese consider Fujiyama a sacred mountain, and they have built a shrine on its peak. Thousands of pilgrims climb the mountain to visit this shrine, named Ainu (meaning "everlasting life"), every summer.

Artists' Inspiration

The Japanese people revere the mountain as a symbol of beauty, and artists and photographers flock to Mount Fuji to capture its beauty on canvas and film.

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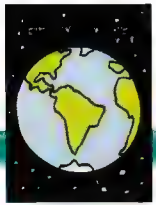
Where is Mount Olympus?



GEOGRAPHY

1. Greece
2. Malaysia
3. Hungary

Illustration Gary Fields

©1995 Nintendo

Mount Olympus

Mount Olympus is the highest peak in Greece. It is 9,570 feet (2,917 m) high and is located near the coast of the Aegean Sea.

1 Mount Olympus is in Greece.

© L. Maquet

Because Mount Olympus was so inaccessible to early Greeks they imagined the only individuals who lived there must be gods.

Because of its height and ruggedness, early Greeks believed Mount Olympus was the home of their gods.

Name of the Games

Sports were very important to the ancient Greeks, who believed that athletic competition pleased the spirits of the dead. Four national sports festivals developed in Greece, the most popular of which were the Olympic Games held in honor of Zeus, the king of the gods. The first recorded Olympic contest was held in the Stadium of Olympia in 776 B.C. This stadium could seat 40,000 people! After the Romans conquered Greece, the games lost their religious significance. Instead, athletes competed for money. Games were held every four years, just as they are today, until 394 A.D., when Emperor Theodosius banned them because he did not approve of the non-Christians rites connected to the events. The games were not held again until over 1500 years later.

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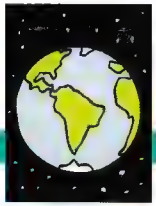
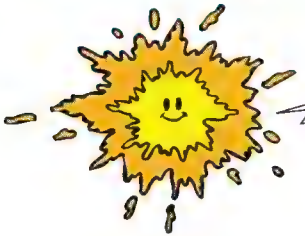
Where does the needle of a magnetic compass point?



GEOGRAPHY



1. Toward the sun
2. Downwind
3. To the North and South Poles

Illustration: Gary Fields

©1998 Nintendo

Compass

A compass works because the Earth behaves like a huge magnet with poles at either end. Compass needles align themselves with these poles, pointing to the Earth's magnetic North and South Poles.

3 The needle of a magnetic compass points to the North and South Poles.

© Gaspanni ERL / Spu Icono

Christopher Columbus was probably one of the first people to notice the difference between the Earth's magnetic poles and geographic poles.

Before compasses, people navigated by the position of the sun, moon, and stars. But that didn't work very well when the sky was cloudy!

Compass Card

Compasses have four cardinal, or main points—north (N), south (S), east (E), and west (W)—and four intercardinal points: NE, NW, SE, and SW. These points are printed on a "compass card" under the needle, on the "floor" of the compass. More detailed compasses have more points marked on the compass card.

A Simple Compass

You can make a simple magnetic compass by placing a sliver of lodestone (magnetic iron) on a piece of wood floating in a bowl of water. The wood will move around until the sliver of iron is pointing north and south.

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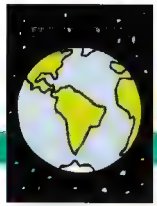
Where is Tibet?



GEOGRAPHY

1. New Mexico
2. Southern China
3. South Africa

Illustration Gary Fields

©1995 Nintendo

Tibet

Known as the Roof of the World, Tibet is a region measuring 471,700 square miles (1,221,700 sq. km) located on the southern border of China next to India, Nepal, and Bhutan.

2 Tibet is in Southern China.

© Gasparini ERL / Spa Icono

The Tibetan people are thought to descend from the Mongolians of the central part of the Asian continent.

Tibet is on a high plateau bordered on the west and south by the Himalayas. The northern part of the high plateau, called the Byang-thang, is fairly level and extends more than 800 miles (1,300 km) from west to east. It's approximately 15,000 feet (4,600 m) high.

Lamaism

The Tibetan religion, central to the country's culture, is Lamaism. Lamaism, a form of Buddhism has suffered opposition from the country's rulers throughout history. Today the Chinese, who have control over Tibet, disapprove of the Tibetan religion, so much that the high Tibetan Buddhist priest—the Dalai Lama—has had to seek refuge in India.

Much of the Lamaism philosophy is based on reincarnation—the belief that after death, we all eventually return to earth, be it as a plant, an animal, or a human.

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D3 054 33 15

What is Polynesia?

GEOGRAPHY

1. A group of islands in the South Pacific
2. A type of memory loss
3. A spicy Indian dish

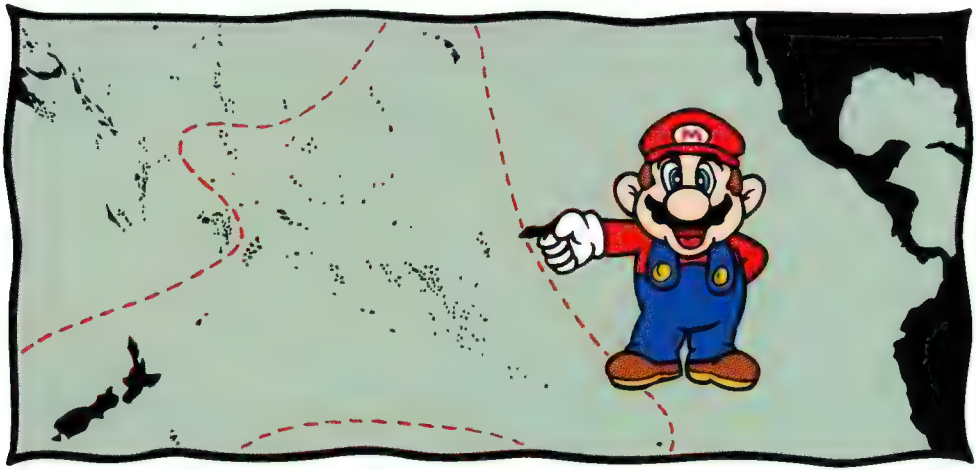

Illustration: Gary Fields

©1995 Nintendo

Polynesia

Polynesia is a group of islands spread across an enormous triangular area of the Pacific Ocean. Hawaii is at the top of the triangle, and the two bottom points are at New Zealand and Easter Island.

1 Polynesia is a group of islands in the South Pacific.

© P. de Wilde / Hoa Qui

The word Polynesia comes from the Greek word "poly" meaning "many" and "nesoi" meaning islands.

Polynesia covers a total land area of about 10,700 square miles (17,200 sq km), not counting New Zealand and Fiji. Approximately 1.5 million people live in this region.

Three different types of islands make up the three different regions of Polynesia. Coral atolls are in the southeast. These islands surround a central lagoon and are bordered by a reef. The vegetation on these islands is concentrated along the shores. The second type of island is volcanic, such as the Hawaiian and Samoan islands. Their terrain is rugged and there are many inactive, as well as some active, volcanic features like craters and volcanic plugs. The third type of island is the Makatea islands which have rugged surfaces and steep cliffs along the shorelines due to erosion caused by wind, waves, and water.

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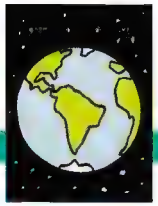
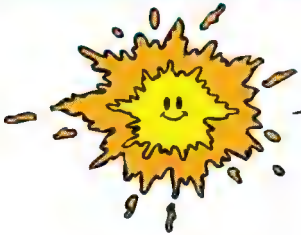
What river runs through Egypt?



GEOGRAPHY



1. The Seine
2. The Ganges
3. The Nile

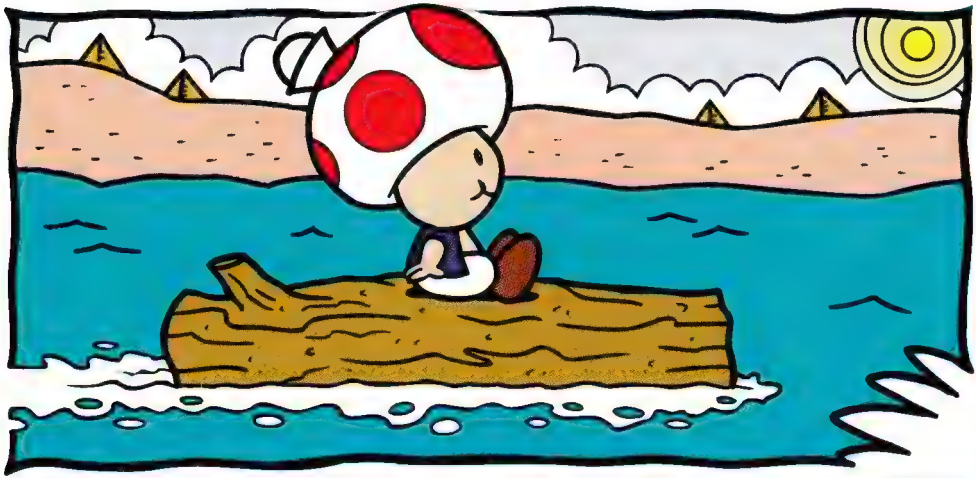


Illustration: Gary Fields

©1995 Nintendo

Nile River

The Nile in Africa is the world's longest river, flowing north for 4,132 miles (6,650 km) into the Mediterranean Sea. The Nile begins in Burundi and crosses Rwanda, Uganda, Sudan, and Egypt.

3 The Nile River runs through Egypt.

© H. Ruiz / Hoa-Qui

Sailors cruise the Nile today just as Egypt's queen Cleopatra did centuries ago.

The Nile flows through areas with varied climates, ranging from deserts in the north to tropical rain forests in the south. It is home to many kinds of water animals, including fish, snakes, lizards, turtles, and crocodiles. Hippopotamuses live in the southern part of the river. More than 2,000 miles (3,200 km) of the Nile are navigable, that is, deep and wide enough for boats to pass.

Ancient and Modern

In Egypt, on the Nile's west bank lies the Valley of the Kings, a burial ground for Egyptian rulers from between 1570 and 1070 B.C. It is very close to the river, but hidden by high cliffs and a long, narrow, winding entryway.

Among newer developments along the Nile is the Aswan High Dam, completed in 1970.

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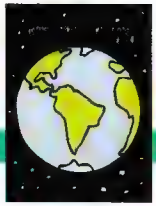
What is the capital of Portugal?



GEOGRAPHY

1. Geneva
2. Lisbon
3. Budapest

Illustration: Gary Fields

©1995 Nintendo

Lisbon

Lisbon, or Lisboa in Portuguese, is the capital and largest city of Portugal. Lisbon is also one of the finest seaports in Europe.

2 The capital of Portugal is Lisbon.

© M. Drachoussoff / Hoa Qui

Lisbon, capital of Portugal, is located on the Tagus River.

The Lisbon metropolitan area is home to more than 20 percent of the Portuguese population, and is the main cultural and educational center of the country.

History

Lisbon is thought to have been founded by the Phoenicians around 1200 B.C. Later, it was occupied by the Romans, then taken over by Germanic invaders, called Visigoths, in the 5th century A.D. It was then captured by the Moors—from northern Africa—in 716. The Moors ruled the city, which they called Lixboa, until it was recaptured by the Portuguese in 1147. Over the next several centuries, Lisbon became one of the wealthiest cities in Europe. Its importance as a trade center soared, particularly after the Portuguese explorer Vasco de Gama returned from a voyage in 1499 having discovered the sea route to India. Today, Lisbon is once again an important commercial port city with shipyards, manufacturing plants and oil refineries.

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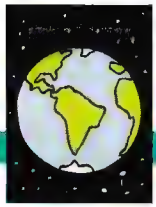
What city is known as the Queen of the Adriatic?



GEOGRAPHY

1. Venice, Italy
2. Oslo, Norway
3. Sydney, Australia

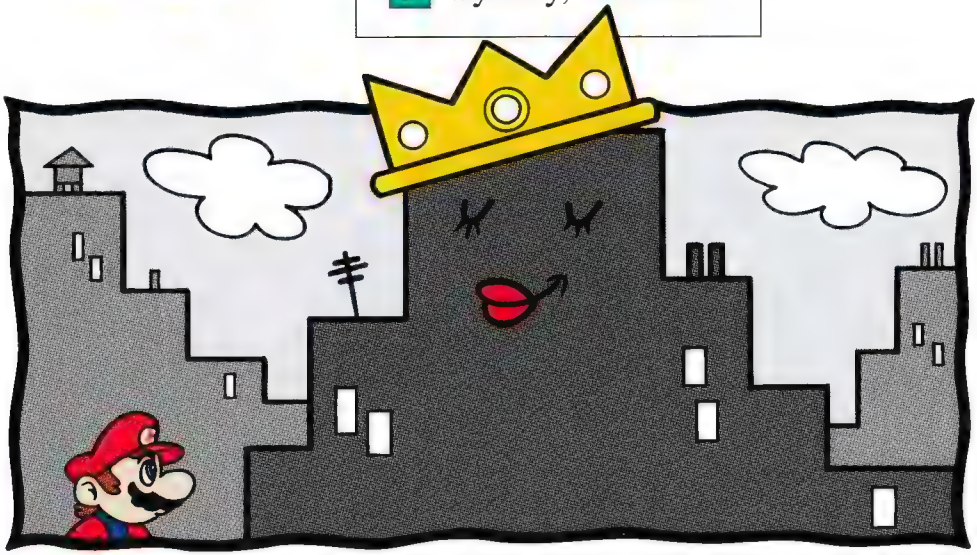


Illustration Gary Fields

©1996 Nintendo

Venice

There are no cars in the city of Venice. People travel from place to place by boat along the city's many canals.

1 Venice, Italy is known as the Queen of the Adriatic.

© Len Sirman

The Doges' Palace is located at the eastern end of Saint Mark's Square.

Venice has the nickname Queen of the Adriatic because it has served as an important naval power and trading center throughout history. Located in northeastern Italy, it is spread over 120 islands in a lagoon between the mouths of the Po and Piave rivers. About 400 bridges connect the islands of Venice.

Drawing most of its income from tourism, Venice is known for its beautiful architecture, canals, and many museums and cultural events. Its glassware, mirrors, glass beads, and lace, made primarily on neighboring islands, are famous all over the world.

Landmarks

The center and busiest part of Venice is Saint Mark's Square. Saint Mark's Cathedral and the Doges' Palace, at the eastern end of the square, are the two of the most splendid buildings in Venice. At the northern end of the square is the Procuratie Vecchie, and at the southern end is the Procuratie Nuove.

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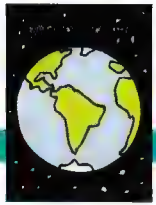
How are mountains formed?



GEOGRAPHY

1. By volcanic activity and erosion
2. By avalanches and earthquakes
3. By underground rivers and streams

Illustration Gary Fields

©1996 Nintendo

Mountains

Mountains are geographic landforms that rise sharply above surrounding land and have a narrow top area, or summit. Mountain chains or ranges affect the weather and pose a challenge to communication and travel.

1 Mountains are formed by volcanic activity and erosion.

© GLMR / Hoaqui

Mountains in the same range usually are of the same age and origin.

Mountains are classified by their structure and origin. There are four main classes of mountains: volcanic, erosional, fault-block, and folded mountains.

Making Mountains

Erosional mountains are formed when erosion carves out or wears down less resistant rocks, leaving behind a mass of stronger rock that forms a mountain. Pikes Peak in Colorado is an example of an erosional mountain.

When large blocks of Earth's crust shift vertically, fault-block mountains are formed. Nevada's Basin and Range Province is made up of fault-block mountains.

Folded mountains are formed when Earth's crustal plates either move apart or converge. The Appalachians, in the eastern U.S. may have developed when two plates converged.

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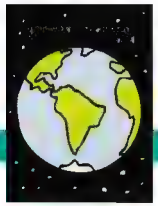
What causes a crevasse in a glacier?



GEOGRAPHY

1. Irregularities in speed of movement
2. Sudden blizzards
3. Avalanches and landslides

Illustration Gary Fields

©1996 Nintendo

Crevasses

Ice doesn't mold perfectly to the rocky surface over which a glacier creeps. As glaciers move over an uneven surface, their speed constantly changes. This causes the glacier to crack and form deep fissures, called crevasses.

1 Irregularities in the speed at which a glacier moves cause crevasses.

© L. Maquet

Beneath their surfaces, glaciers develop huge cracks, called crevasses.

In mountainous regions, new layers of snow accumulate on top of older ones, turning the older layers to ice. When masses of deep snow and ice reach a thickness of about 100 feet (30 m), they begin to slide slowly down the mountainside.

Glacier Flow

Glaciers flow at varying speeds. Most glaciers slide downward less than 3 feet (1 m) per day. However, in 1936-37, the Black Rapids Glacier in Alaska was reported to be moving at a record rate of more than 100 feet (30 m) per day. This was probably the result of very heavy snowfall in the area in earlier years.

The crevasses that develop in a glacier may grow many feet deep and become covered with new snow. Crevasses may thus be hidden and are a great danger to alpine hikers and skiers!

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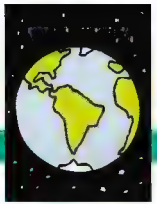
Where would you find more ice in the summer?



GEOGRAPHY

1. In Antarctica
2. In the Arctic
3. In the Sahara

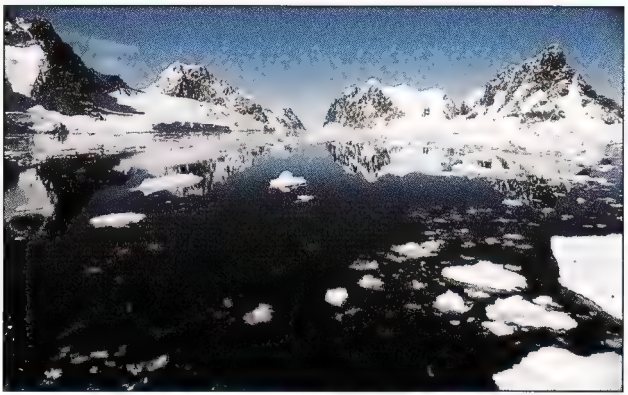
Illustration Gary Fields

©1996 Nintendo

Arctic and Antarctic

The Arctic, the northernmost land on the Earth, includes sections of North America, Europe, and Asia. Antarctica, the southernmost land mass, is a separate continent.

1 In the summer, there is more ice in Antarctica.



© P de Wilde / Hoaqui

Antarctica, the continent at the South Pole, is the coldest place on Earth.

With the North Pole at its center, the Arctic region encompasses the Arctic Ocean, all of Greenland, and the northern tips of Alaska, Canada, Russia, Finland, Sweden, and Norway. The name "Arctic" comes from *arktos*, the Greek word for "bear." The region earned this name because the constellation Ursa Major, or the Great Bear, is clearly visible in the northern sky.

In summer, most of the Arctic's snow and ice melts.

Coldest Place on Earth

Approximately one-and-a-half times the size of the U.S., the continent of Antarctica has the coldest climate on Earth. All but 2 or 3 percent of the land is covered by an ice sheet extending out into the ocean. In summer, several thousand people live in Antarctica, but only a few hundred people stay during the winter.

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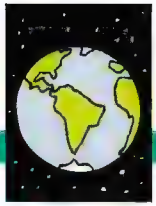
Where do eternal snows exist?



GEOGRAPHY

1. In the Alps and Himalayas
2. In northern Minnesota
3. In the Sierras

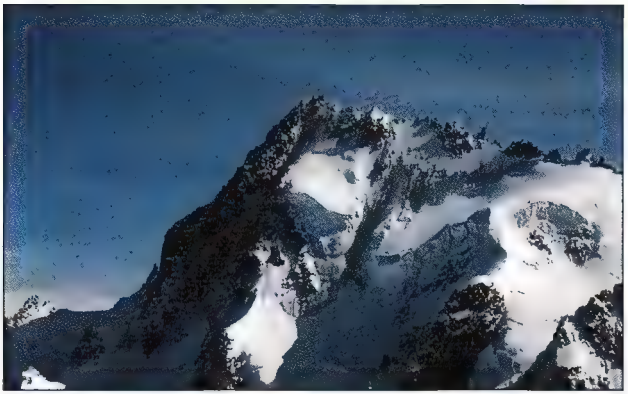
Illustration: Gary Fields

©1996 Nintendo

Eternal Snow

Snow does not last forever: it melts into water and evaporates, or freezes into ice. But some high mountain peaks are always capped with a layer of "eternal snow."

1 **Eternal snows can be found on the highest peaks of the Alps and the Himalaya Mountains.**



© L. Maquet

On the highest peaks of the Alps, snow never completely melts.

Eternal snows are found in high mountains above the treeline—the zone where it's too cold for trees to grow. The existence of eternal snows depends on an area's location and the amount of snowfall it gets.

In the Alps, eternal snows are found at elevations of 8,580 to 10,560 feet (2,600 to 3,200 m) above sea level. Eternal snows in the Himalayas exist between 14,190 and 17,160 feet (4,300 and 5,200 m). In Colombia, South America, eternal snows—called nevado—are located above 15,000 feet (4,500 m).

Eternal snows exist at altitudes from 16,500 to 19,140 feet (5,000 to 5,800 m) in the Andes Mountains and central Africa.

In Antarctica, the continent with the coldest climate, the snow never melts at and above sea level. In the slightly warmer Arctic, eternal snows exist at 165 feet (50 m) and higher.

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What can trigger an avalanche?

GEOGRAPHY

1. Sudden vibrations
2. A lunar eclipse
3. Mountain Goat movement

Illustration Gary Fields

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Avalanches

An avalanche is the sudden movement of a mass of snow or ice down a slope. It can be caused by thawing snow and sudden vibrations, including loud noises.

1 **Sudden vibrations are one of the factors that can trigger an avalanche.**

© Explorer / Pascal

In mountainous areas, snow patrols use explosives to set off minor, less destructive avalanches.

When newly fallen snow weighs down older layers of weakening snow, there is increased danger of an avalanche. Avalanches occur frequently on steep slopes when heavy snows fall in a short span of time and have no time to settle. Avalanches can reach speeds over 100 miles per hour (160 km/hr).

There are two main types of snow avalanche. Loose snow avalanches accumulate more and more snow as they move down the side of a mountain. Slab avalanches are composed of solid, more compact snow and ice that breaks off in a single mass. Slab avalanches are more dangerous than loose ones and are the cause of most avalanche-related accidents.

Prevention

There are many ways to reduce or prevent avalanches. Sometimes explosives are used to deliberately cause small avalanches, thereby avoiding big ones later on.

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What makes the coastline recede?

GEOGRAPHY

1. Erosion by waves and currents
2. Acid rain
3. Continental drift

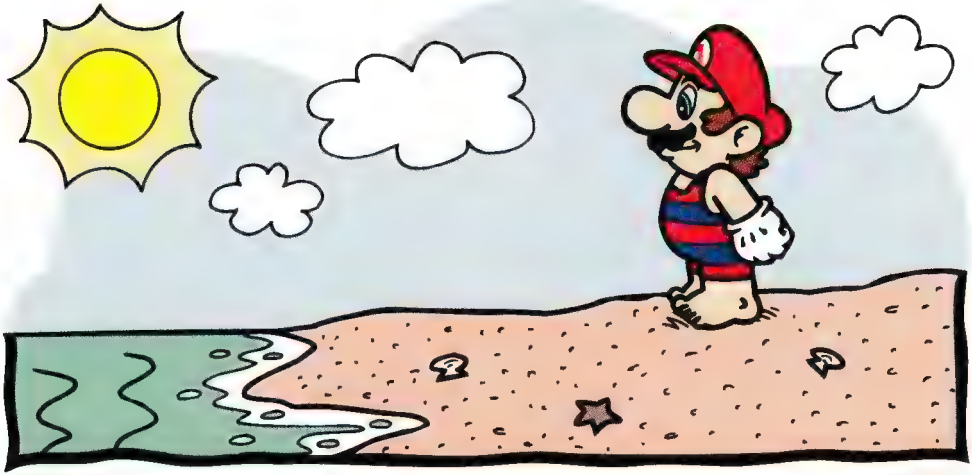

Illustration: Gary Fields

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Coastlines

Coastlines are continually being pushed around by powerful ocean tides. Coastal erosion of rocky cliffs and sandy beaches is especially severe during storms, when tides are higher and waves are rougher.

1 **Coastlines recede—are pushed back—by constant battering from ocean waves and currents.**

© Len Sirman

The rate of coastal erosion depends on the types of rocks present. Bays are carved out of softer elements like clay and sand, while cliffs are carved out of harder materials like limestone and sandstone.

Coastlines do not, however, just recede until they disappear. Many rivers leave soil deposits behind when they feed into the ocean. These deposits are made up of rocks and other material that the rivers have picked up along their course. So coastlines are always shifting, but most of the time so slowly that coastal geologists have to look at carefully kept records to notice a difference.

On the Dunes

At the beach, you might see signs telling people to keep off the sand dunes. This is because dunes are easily destroyed by people walking or riding over them. Since dunes are important to the shape and size of a coastline, conservationists say it is important to leave them undisturbed so that coastal erosion does not occur any faster than normal.

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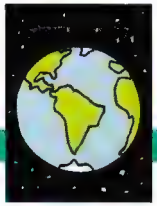
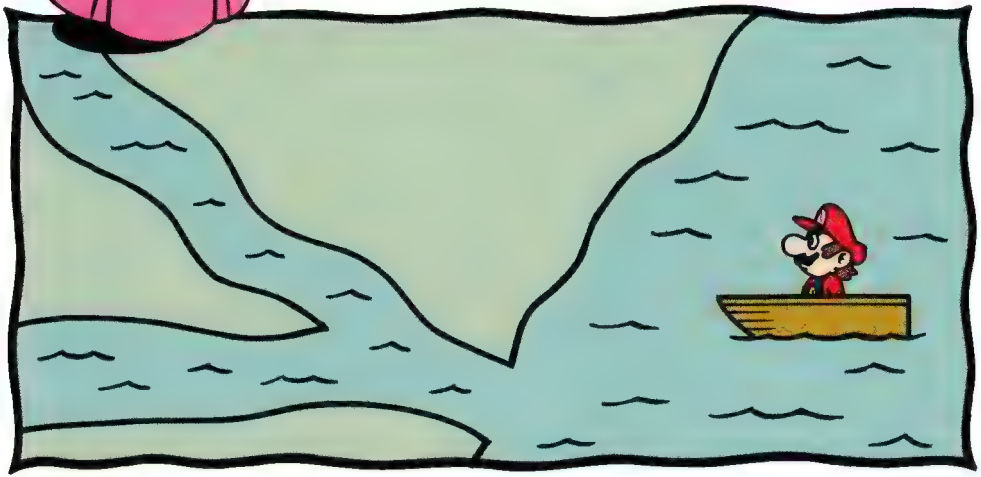
What is a delta?



GEOGRAPHY

1. Where a canyon suddenly ends
2. Where tide pools group together
3. Where a river empties into a sea



Illustration, Gary Fields

©1995 Nintendo

Delta

Deltas are most common in protected gulfs, like the Gulf of Mexico, where the Mississippi River ends, or in inland seas that lack strong tides, like the Mediterranean Sea, where the Nile forms its delta.

3 **A delta is the place where a river splits into several smaller branches before emptying into the sea.**

© Gamma

People are drawn to live on delta plains because the moist mineral-filled soil is good for growing food.

The steady flow of a river carries along debris from the land it passes. This is known as alluvial deposit. These deposits are left by the river at the point where it empties into the ocean. A delta is made up of these deposits, which build up to form a plain.

Fertile Land

Deltas are frequently very fertile because of the presence of so much water. People tend to live on delta plains because the moist mineral-filled soil is good for cultivating. Much of the world's petroleum, or oil, reserves are found in ancient delta rocks, where clay and other sediments have been pressed down over time by gravity to form the fossil fuel.

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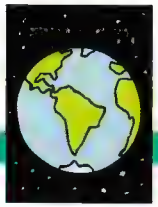
What shape is the planet Earth?



GEOGRAPHY

1. Round
2. Slightly pear-shaped
3. Oval

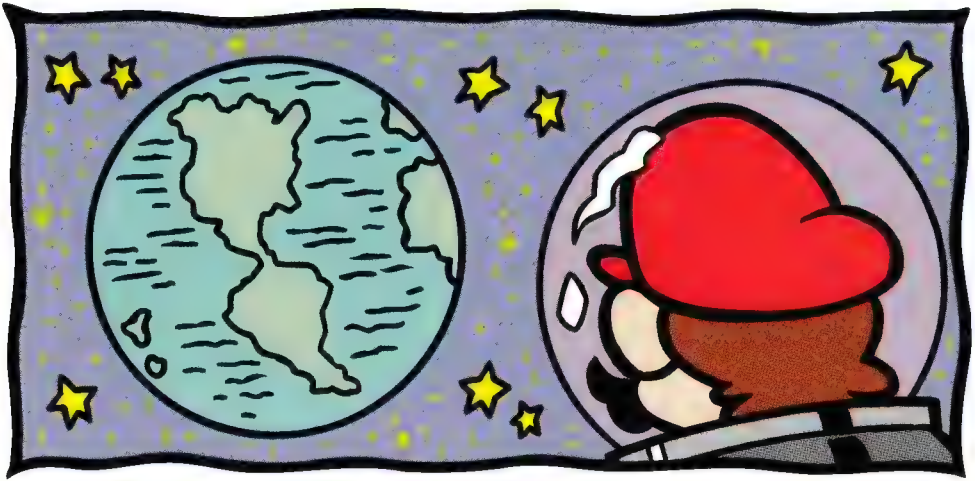


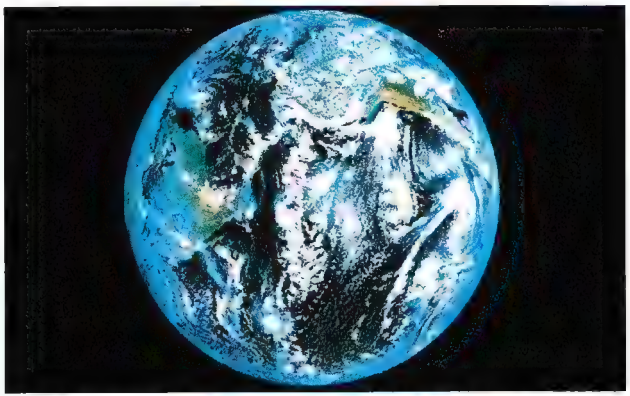
Illustration Gary Fields

©1995 Nintendo

Earth

Earth's equator bulges 13 miles (21 km); the North Pole bulges 33 ft (10 m); and the South Pole is indented about 100 feet (31 m).

2 Earth is slightly pear-shaped.



© Len Sirman

Geologists estimate that Earth is about 4.65 billion years old.

Earth is the largest of the four inner terrestrial planets (Mercury, Venus, Earth, and Mars). Satellites and laser beams have helped geologists to measure Earth's exact dimensions.

Earth Facts

Earth moves through space at the rate of about 12.5 miles (20 km) per second. Earth and the moon also move together in a nearly circular orbit around the sun. Earth rotates on its axis once every 23 hours, 56 minutes and 4.1 seconds.

Earth consists of five parts: the atmosphere, which is mostly gas; the hydrosphere, which is liquid; and the lithosphere, mantle, and core or center, which are all solid. Most of Earth's mass is concentrated in the mantle and core.

Geologists estimate that Earth is about 4.65 billion years old. The entire Earth behaves like an enormous magnet, and the magnetic pull of the north and south poles reverses from year to year.

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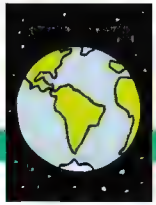
What is the continental drift?



GEOGRAPHY

1. A type of wood found on the beach
2. The lifestyle of nomadic peoples
3. A theory of how the continents came to be

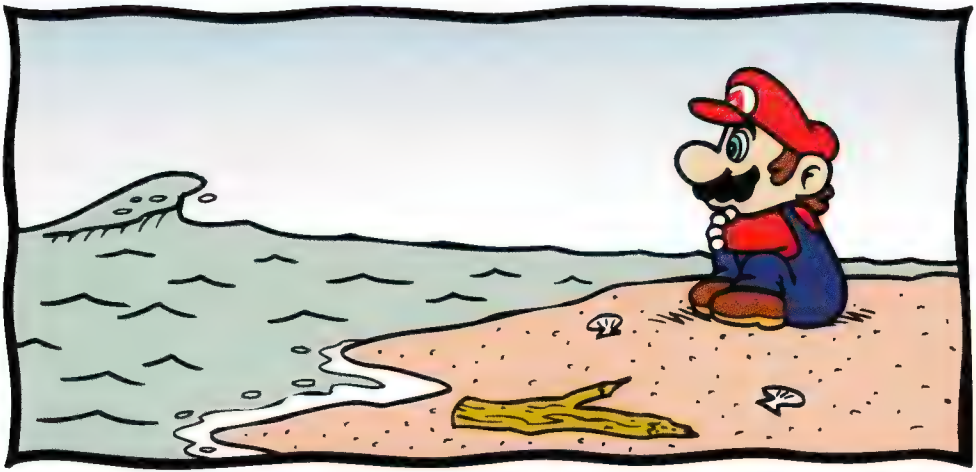


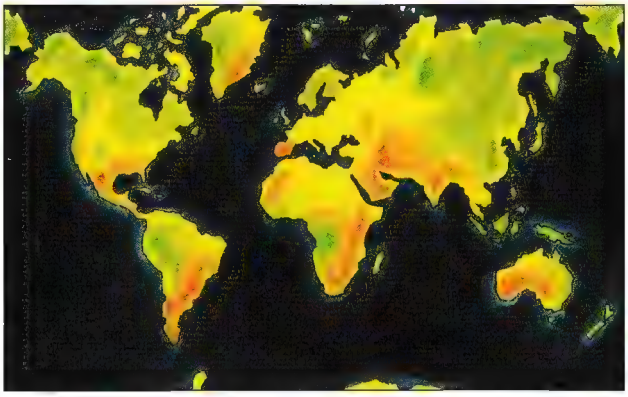
Illustration: Gary Fields

©1996 Nintendo

The Continental Drift

In 1912, the theory of continental drift was proposed by Alfred Lothar Wegener, a German geologist, who recognized that continental plates rupture, drift apart, and eventually collide with each other.

3 The continental drift is a theory that explains how Earth's continents and oceans came to be.



© Giraudon

In the Quaternary Period, the Himalayan mountains were created by the continental drift. Today the continents continue to drift.

One of Wegener's strongest arguments for continental drift was the way the edges of the continents seem to fit together like huge puzzle pieces, implying that perhaps once they were all attached.The theory of the continental drift is based on the idea that all of the continental masses we know today were once part of a single huge land mass named Pangea.

Pangea Breaks Apart

Late in the Triassic Period (about 230 million years ago), Pangea broke into pieces, which began to move apart. Geologists now believe that the warm regions of South America, southern Africa, India, and Australia were once covered by glaciers — huge, slow-moving masses of ice — which could be explained if these continents were once united around the South Pole.

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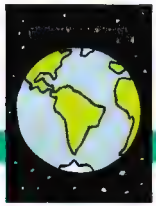
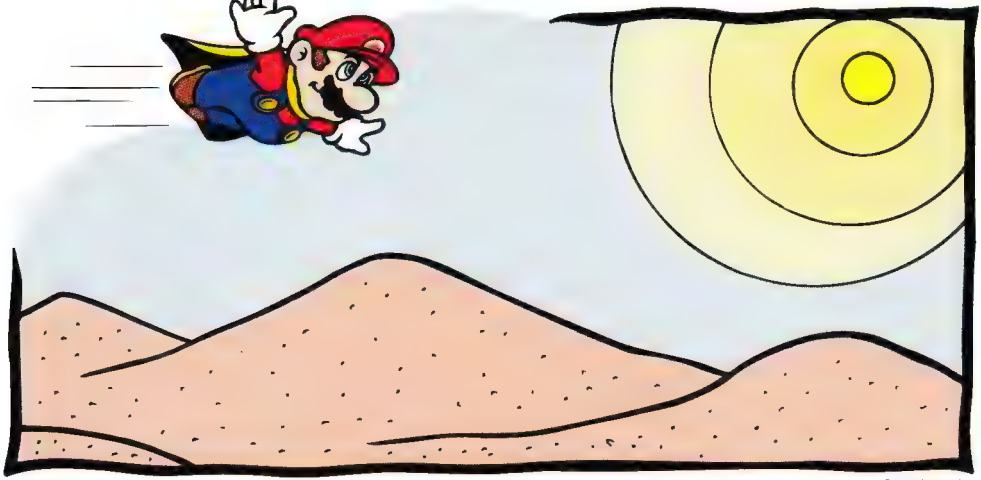
How much of our planet is covered by deserts?



GEOGRAPHY

1. Approximately 28%
2. Approximately 59%
3. Approximately 76%



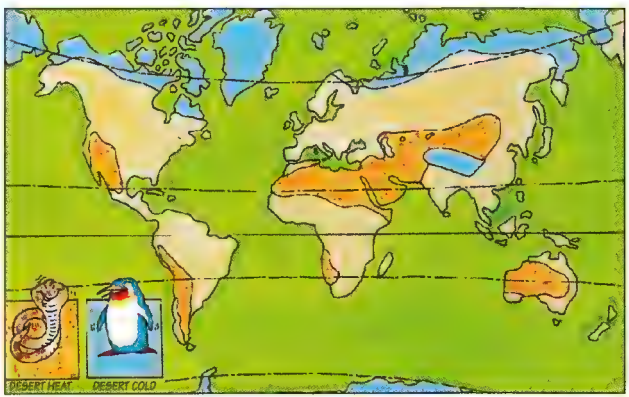
Illustration, Gary Fields

©1996 Nintendo

Deserts

The Sahara desert is the world's hottest region in summer and the world's largest desert. It is bigger than the United States and has an area of over 3.5 million square miles (5.6 million sq km).

1 Deserts cover approximately 28% of Earth's land surface.



© Y. Tabarès

Dozens of countries are directly affected by desertification. Famine strikes in some places, while others fight desperately to maintain a water supply.

It may seem strange, but desert soils are actually very fertile because so little water moves through them to carry nutrients away. When people grow crops in the desert they have to irrigate with water from other sources, such as rivers or wells. Bringing water into the desert like this can cause serious problems. It evaporates, leaving behind salt on the surface soil, which eventually makes it impossible to grow crops there.

Desertification

Sometimes people take water from reservoirs deep beneath the desert. When this water is gone there is no way to replace it, which causes problems for the plants that grow in neighboring areas. These plants die and the desert essentially spreads in a process is called desertification. A 1984 study made for the United Nations stated that at least 35 percent of Earth's land surface was threatened by desertification.

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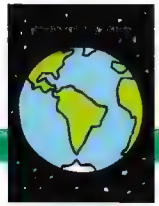
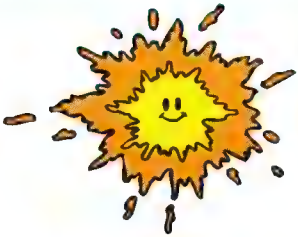
Can earthquakes be predicted?



GEOGRAPHY



1 No

2 Yes

Illustration: Gary Fields

©1996 Nintendo

Earthquakes

People have been trying to predict earthquakes for ages. Modern geology has shown us that the earth is covered with fault lines which indicate a higher risk for earthquake at those locations.

1 No, attempts to predict earthquakes have not been very reliable.

© Len Sirman

Seismologists' instruments measure vibrations of the earth's crust. They are very sensitive but still cannot predict the exact date of an earthquake.

Fault lines mark the shifting of the continental plates that cover the earth's surface. They are called faults because they are flaws or cracks in the earth's crust. There is more risk of an earthquake at those points where two plates come together.

Seismic Activity

Plate tectonics is the study of the shifting of these continental plates over time. The shifting has slowed down since the continents took the shapes we are familiar with. Plates still shift constantly, although much more slowly, sometimes leading to seismic activity—the earthquakes that are so hard to predict.

Geophysicists are able to measure increases in seismic activity, and examine written records of earthquakes in different parts of the world, but this has not guaranteed accurate prediction of earthquakes.

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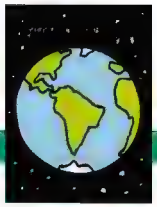
When was Earth formed?



GEOGRAPHY

1. 1 million years ago
2. 4.5 billion years ago
3. 15 million years ago

Illustration: Gary Fields

©1996 Nintendo

Earth's Origin

Earth is the largest of the inner planets, those closest to the sun. The inner planets are Mercury, Venus, Earth, and Mars.

2 Earth was formed about 4.5 billion years ago.

© Explorer Archives

In the 17th century, people estimated that Earth was only a few thousand years old.

Earth is unique among the inner planets in that its atmosphere retained the water that comets brought to its surface soon after it was formed. Because of the presence of water, life appeared within a billion years after Earth's beginning. Plants developed that gave out oxygen and built up the atmosphere which today is one-fifth oxygen and the rest mainly nitrogen.

Active Surface

Earth has the most active surface of any of the inner planets. There is a great deal of volcanic and seismic, or earthquake-related, activity, which drives the continental plates over the surface. This activity is caused by heat at the core which flows out toward the surface. That is why the continents are constantly shifting, although slowly enough that we usually cannot see it on a day-to-day basis. However, from time to time this shifting is dramatic, such as when an earthquake or a volcanic eruption occurs.

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What is the most dangerous kind of volcano?

GEOGRAPHY

1. Inactive volcano
2. Fissure volcano
3. Central volcano

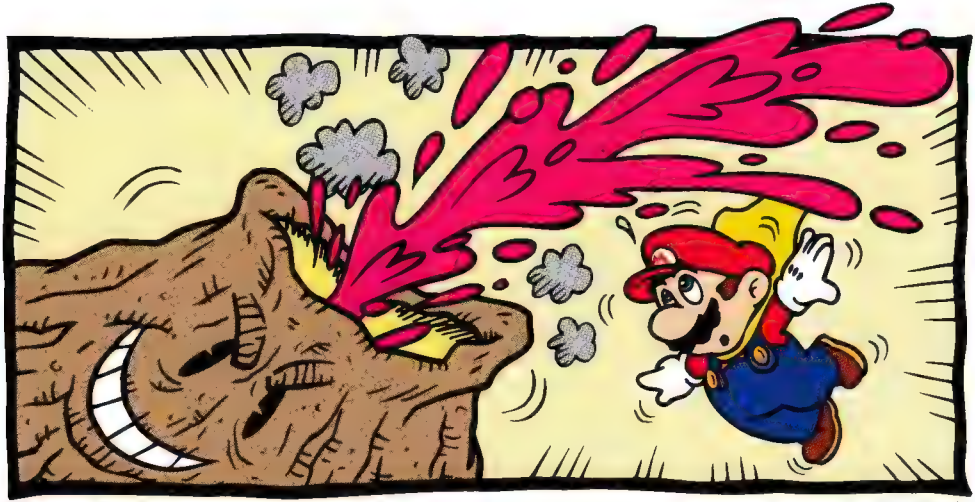


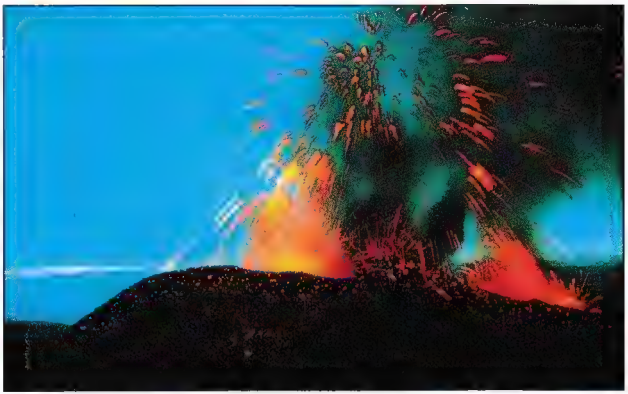
Illustration Gary Fields

©1996 Nintendo

Volcanoes

Central volcanoes have a single vertical lava pipe and tend to take on a cone shape. Pressure builds up inside the pipe until it erupts, sending lava, smoke, soot and gases out in a violent spray.

3 Central volcanoes are the most dangerous kind of volcanoes.



© Len Sirman

In 1991, Mount Pinatubo covered the Philippines in ash, gases, and lava, exploding in a tower that reached 19 miles (31 km) at its highest point.

Fissure volcanoes are much more common than central volcanoes. Fissure volcanoes occur along fractures in the earth's crust. The molten rock, or lava, flow is fairly steady and quiet, so not much pressure is allowed to build up. There are fissure volcanoes on the ocean floor as well, and lava that comes in contact with cold sea water forms pillow lava—piles of sack-shaped rock masses.

Eruptions

Central volcanoes are involved in most of the major eruptions. You may have heard of the eruptions of Mount Vesuvius that buried the Roman island of Pompeii in 79 AD, or the more recent explosion of Mount St. Helens in Washington state in 1981 or Mount Pinatubo in the Philippines in 1991.

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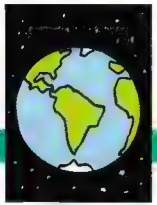
Where does tea come from?



GEOGRAPHY

1. Georgia
2. England
3. China

Illustration: Gary Fields

©1996 Nintendo

Tea

According to legend, tea has been known in China since about 2700 BC. The first published accounts of methods of planting, processing, and drinking tea date from the 10th century BC.

3 **The oldest records of tea consumption and preparation are from China.**

© Len Sirman

In many countries tea is more than a beverage. Tea time represents an occasion for friendship and relaxation.

The tea plant itself is native to Southeast Asia. It was brought to Europe by the Dutch in the early 17th century. While tea is consumed throughout Europe, it is most popular in England where people drink more tea than coffee. Like coffee, tea is a stimulant, its caffeine concentration ranges from 2.5 to 4.5 percent; coffee is 1.5 percent caffeine.

Varieties of Tea

The three kinds of beverage tea, *Camellia sinensis,* differ in the way they are processed. The leaves of black tea, made by every tea-growing nation, are partially dried and their juices squeezed from them before they are fermented and dried. The leaves that make green tea are steamed, crushed, and dried. Oolong tea leaves are partly fermented. Tea leaves are sorted into grades on the basis of size only, the smallest being used in tea bags.

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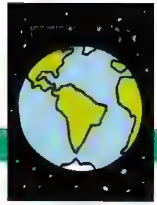
Where is New Caledonia?



GEOGRAPHY

1. In the southwestern Pacific Ocean
2. Just north of Scotland
3. Just off the tip of South America

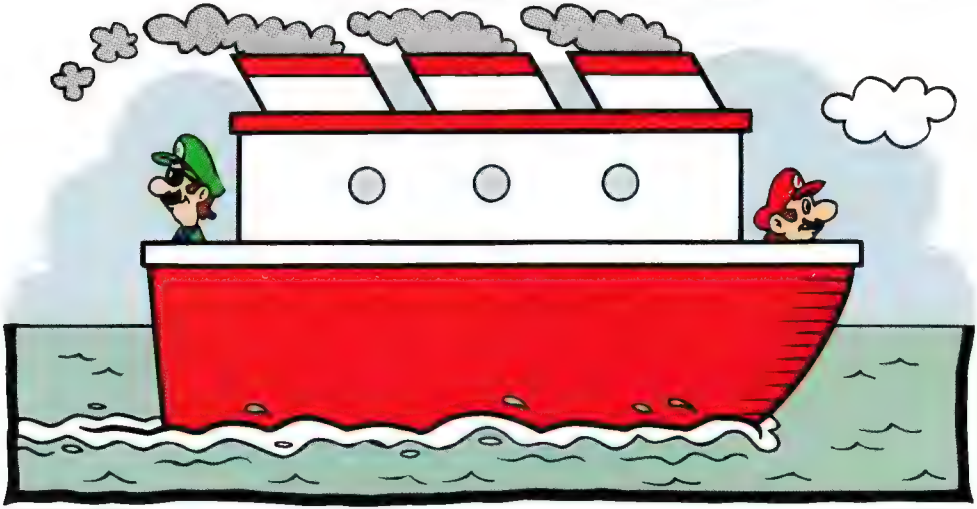


Illustration Gary Fields

©1996 Nintendo

New Caledonia

New Caledonia is a territory of France. The ethnic groups living on its islands tend to keep their own ways of life, and are debating independence.

1 New Caledonia is in the southwestern Pacific Ocean.

© Len Sirman

This illustration shows a Kanak dwelling and an agricultural worker.

About 183,000 people live in the islands of New Caledonia, an overseas territory of France measuring 7,359 square miles (19,060 sq. km) located in the southwestern Pacific Ocean about 1,200 miles (2,000 km) Northeast of Australia. Its capital is Nouméa.

History

Since Captain Cook landed there in 1774, people of many different ethnic groups have come to live in New Caledonia—among them Europeans, Asians, Polynesians and Indonesians. Nearly half of the population—the Melanesians, or Kanaks—are indigenous or native to the islands. Because each ethnic group values its own culture and way of life, there have been internal conflicts. New Caledonians also disagree on whether they should be independent of France.

The economy is dependent on France, but also benefits from tourism and from mining and metallurgy, the science of working with metals. Its nickel reserves are among the largest in the world.

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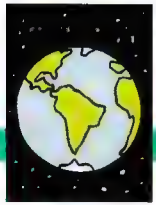
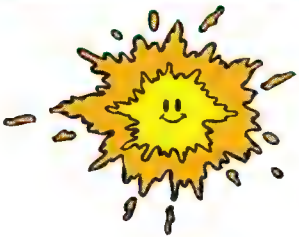
What is the capital of Connecticut?



GEOGRAPHY



1. Hartford
2. New Haven
3. Greenwich

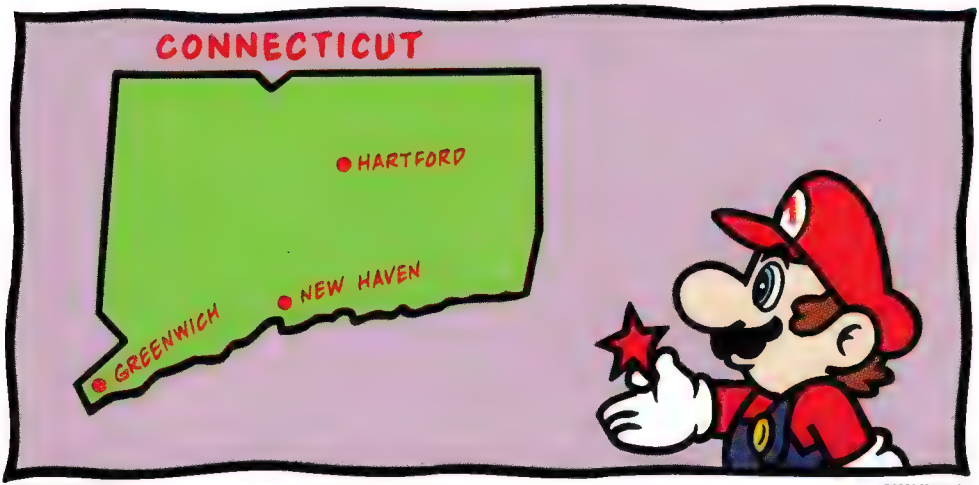


Illustration Gary Fields

©1996 Nintendo

Hartford

Hartford, Connecticut, is a major industrial and commercial center on the Connecticut River. The area was first inhabited by Native Americans of the Saukiog tribe.

1 Hartford is the capital of Connecticut.

© Greater Hartford Convention and Visitors Bureau

Hartford, founded in 1639, is one of the oldest cities in the United States.

Hartford was first visited by Europeans when a Dutch navigator named Adriaen Block explored the Connecticut River in 1614. Shortly thereafter, settlers from New Towne, Massachusetts, now known as Cambridge, came south to form a community in Hartford. The city was an important storage site for ammunition during the Revolutionary War. Wadsworth Atheneum, the country's first public art museum, opened in Hartford in 1844. The writers Harriet Beecher Stowe and Mark Twain lived in Hartford, as did the poet Wallace Stevens. Stevens worked in the insurance industry all the while he was writing and publishing poetry.

Hartford Today

As the state capital, Hartford is the seat of Connecticut's government. Many of Hartford's historic buildings, including the homes of Mark Twain and Harriet Beecher Stowe, are now museums.

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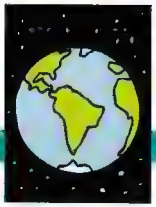
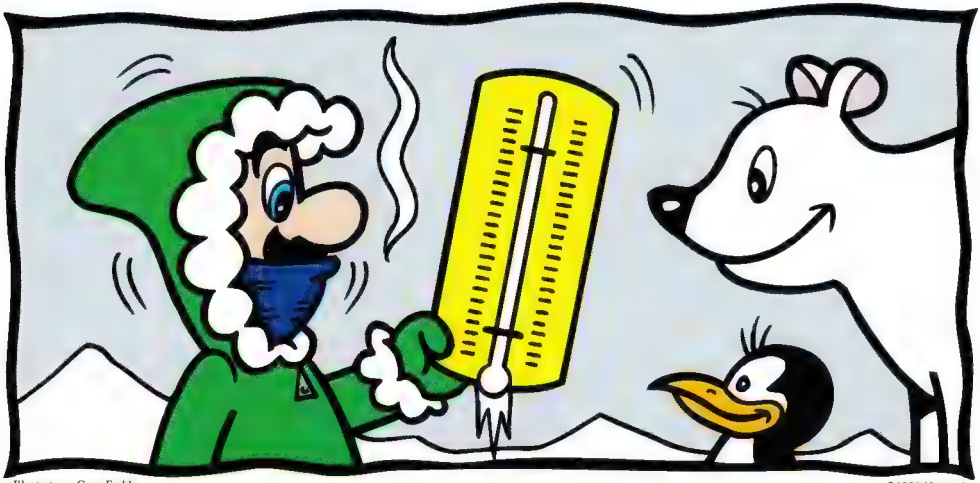
What is the lowest temperature ever recorded in Antarctica?



GEOGRAPHY

1. 76°F (60°C) below zero
2. 126.9°F (88.3°C) below zero
3. 128.6°F (89.2°C) below zero



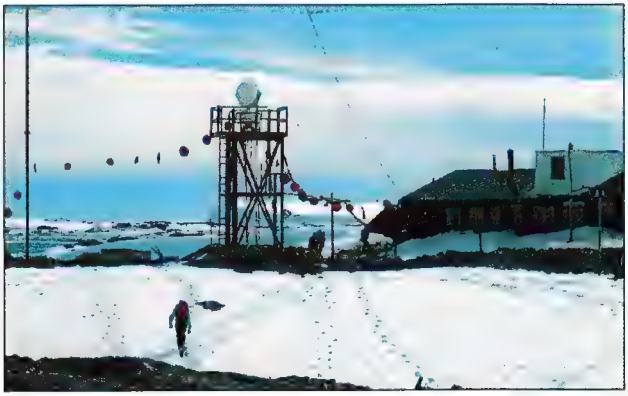
Illustration, Gary Fields

©1996 Nintendo

Antarctica

More than 95 percent of Antarctica is covered with ice. That ice contains about 90 percent of the fresh water on Earth.

3 **The lowest temperature ever recorded in Antarctica is 128.6°F (89.2°C) below zero on July 21, 1983.**



© F. Gohier / Explorer

Antarctica remains an independent territory because it is such an important place for research that the international community has chosen to unite in its scientific efforts.

Antarctica was formed when the super continent Gondwanaland broke apart about 100 million years ago. The piece that became Antarctica drifted from the tropical zone to the South Pole. Because of the Earth's tilt relative to the Sun, Antarctica is mostly dark for six months of the year and mostly light for the other six.

Colder than the Arctic

Antarctica is mostly land, not mostly ocean like the Arctic Circle. The Arctic Ocean moderates the temperature at the North Pole. That is why Antarctica remains much colder than the Arctic even during its light-intensive summer months.

Although almost entirely covered in ice, Antarctica is technically a desert, because its interior plain only gets about 2 inches (50 mm) of rain per year.

Scientists have been studying a hole in the ozone, or layer in the atmosphere that filters out harmful radiation, above Antarctica which appears every spring and then disappears.

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How many miles long is the California coast?

GEOGRAPHY

1. 80 miles (130 km)
2. 800 miles (1,300 km)
3. 8,000 miles (13,000 km)

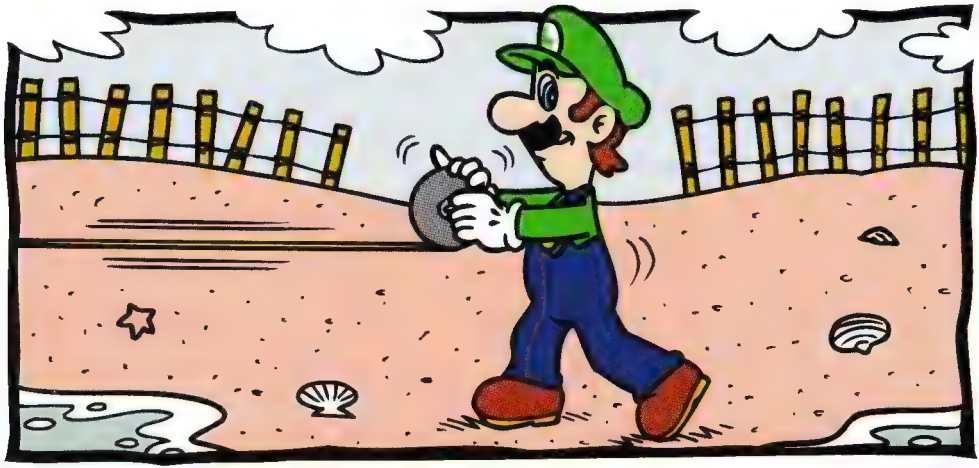

Illustration: Gary Fields

©1996 Nintendo

California

Temperatures are moderate along California's Pacific coast, rarely above 90°F (32°C) and almost never freezing (32°F, 0°C).

2 The California coast is 800 miles (1,300 km) long.

© Len Sirman

In California, the coast has the most stable temperatures, with mild winters and cool summers, because of the moderating effect of the Pacific.

Because California covers a great deal of territory, its climate is very diverse. However, most of it is considered subtropical, because precipitation, or rainfall, is heaviest during the winter months. There are four main climactic regions in California: the coastal mountain ranges, the Sierra Nevada, the Central Valley, and the Great Basin, which contains the eastern deserts. One of these deserts, the Mojave, covers one-fifth of California's area. The Pacific coast is the most thickly settled of all California's regions. The major urban areas—San Francisco-Oakland-San Jose, Los Angeles-Long Beach-Anaheim, and San Diego—are all located along the coast.

A Productive Climate

The state's mild temperatures and long growing season are good for agriculture. Crops are able to survive through the dry season thanks to extensive irrigation. More produce is grown in California than in any state in the U.S.

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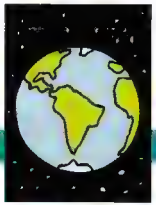
What is the capital of Japan?



GEOGRAPHY

1. Tokyo
2. Osaka
3. Kyoto

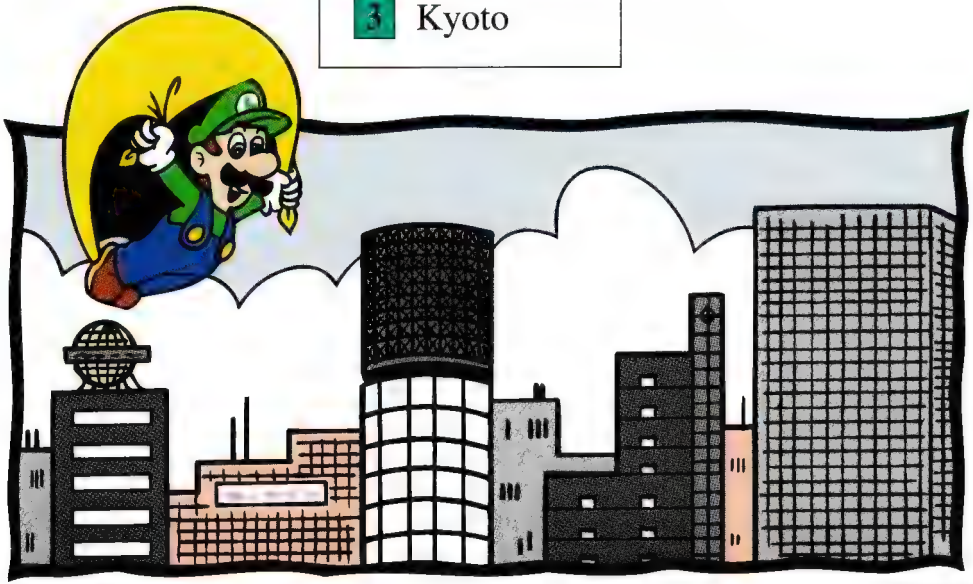


Illustration. Gary Fields

©1996 Nintendo

Tokyo

Tokyo means eastern capital in Japanese. It is one of the most densely populated cities in the world and has been a leading economic center since the 1980s.

1 Tokyo is the capital of Japan.

© Ben Simmons / Diaf

Tokyo is the chief hub of transportation for Japan and an important center for international traffic.

Tokyo sits at the head of Tokyo Bay, on the east coast of Honshu, the largest of the four islands that make up Japan. The 1991 estimated population of Tokyo is about 8 million people. The greater Tokyo area has about 11 million. Tokyo became the capital of Japan in 1868, at which time its name was changed from Edo. Today, Tokyo is at the heart of Japanese finance, industry, commerce, and culture.

Rapid Growth

The bulk of Tokyo's economic development has happened since the 1950s. During World War II, Tokyo suffered heavy damage, and at the war's end in 1945, the city was occupied by American troops until 1952. After 1954, development took off, and by 1964, when Tokyo hosted the Summer Olympic Games, a large-scale urban project was complete. Japan has been a major economic force in the world for more than a decade.

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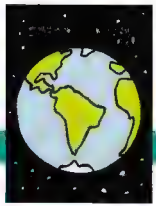
What employs most of India's labor force?



GEOGRAPHY

1. Insurance
2. Manufacturing
3. Health care

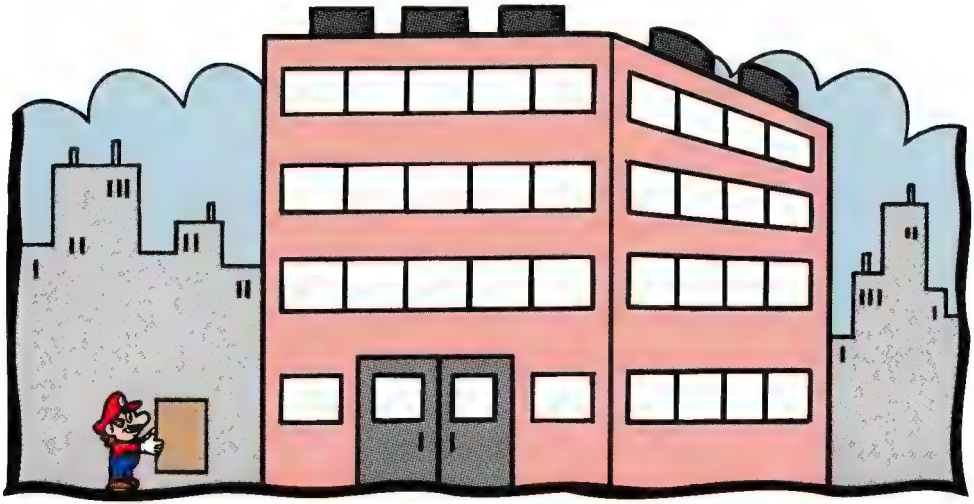


Illustration: Gary Fields

©1996 Nintendo

India

India's main industry used to be the production of cottons and textiles, but in the last century, the manufacture of metals, chemicals, automobiles, and electronics has become more important.

2 Manufacturing employs most of India's labor force.

© Th. Borredon / Explorer

India is right on the Tropic of Capricorn, which is why its climate is warm and humid.

Bombay is the economic, commercial and financial capital of India. India's economic health can be judged by looking at Bombay's. Bombay is India's major western port as well, handling over 40 percent of India's maritime trade.

Diverse Population

While Bombay is the commercial capital, New Delhi is the seat of Indian government and the country's capital. India has 25 independent states and a diverse cultural population, numbering 830 million. People speak one or more of 15 official languages, not counting the 3,000 to 5,000 unofficial dialects. Geographically, India is isolated from the rest of Asia to the north by the Himalayan mountain range. India's two main rivers are the Ganges and the Indus. The country forms a triangle which juts south into the Indian Ocean.

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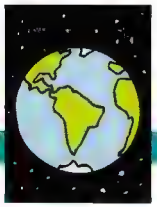
Which of these regions is a continent?



GEOGRAPHY

1. Russia
2. South America
3. The United Kingdom

Illustration, Gary Fields

©1996 Nintendo

Continent

A continent is a vast, continuous land mass. There are seven continents: Asia, Europe, Africa, North America, South America, Australia, and Antarctica.

2 **South America is one of the seven continents of the world.**

© J. Damase / Explorer

Beneath mountainous areas, the rock of Earth's crust extends further underground than below flat areas of land.

About 35 percent of Earth is covered with land. This figure includes the seven continents and the continental shelves, or areas that slope gradually from the ocean shore to a depth of about 600 feet (183 m) below sea level.

Continental Geology

Continental geology is the study of how the continents were formed from Earth's crust. Geophysicists believe that the core, or center, of Earth is a hot, dense, nickel-iron sphere measuring more than 4,000 miles (6,000 km) in diameter. The next layer, the mantle, is composed of partially molten rock about 1,800 miles (3,000 km) thick. The outermost layer of Earth, the crust, is a cooler layer of rock varying in thickness from about 3 miles (5 km) at the ocean floor to an average of 44 miles (70 km) beneath the continents.

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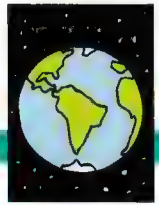
What is the most populous city in China?



GEOGRAPHY

1. Beijing
2. Shanghai
3. Paotou

Illustration: Gary Fields

©1996 Nintendo

China

China is the first nation whose population passed the one billion mark.

1 The most populous city in China is Beijing.

© Baumgartner / Explorer

In large Chinese cities like Beijing, many people find it more practical to commute by bicycle than by car.

China, the world's third largest country geographically after Russia and Canada, is home to more than one-fifth the people of the world. It is the birthplace of one of the first known civilizations, with a recorded history dating back some 3,500 years.

China's Population

In 1993 the estimated population of China was nearly 1.2 billion. Most of the country's inhabitants reside in the 19 eastern provinces that make up the country's historical heartland. About 93 percent of China's population are Han, or ethnic Chinese. The remaining 7 percent belong to ethnic minorities distinguished mainly by differences in language and religion, rather than racial characteristics. In the 1960s, the Chinese government began encouraging people to move to the country's western provinces and independent regions. Currently, about 79 percent of the Chinese population are rural farm dwellers.

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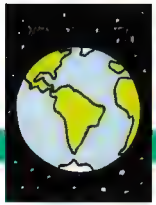
How were state borders determined?



GEOGRAPHY

1. Popular vote
2. Position of geographic landmarks
3. Public lotteries

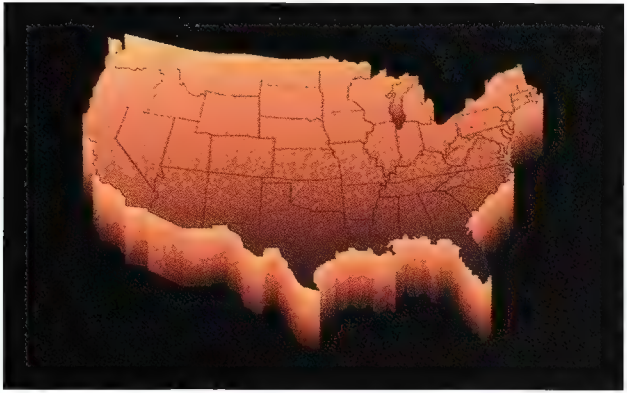
Illustration: Gary Fields

©1996 Nintendo

United States

Many states have natural borders, for example, the Connecticut River separates Vermont and New Hampshire. The St. Lawrence River is part of the boundary between New York and Canada.

2 Most state borders were established based on natural geographic landmarks, such as rivers and mountains.



© Imagnaction / Sipa Press

Above is a map of the 48 states in the contiguous United States. Alaska and Hawaii are not pictured.

British settlers divided their territory in North America into colonies to make it easier to govern. The borders between colonies were often determined by rivers: The Potomac is a natural boundary between Virginia and Maryland, while the Delaware River separates Pennsylvania and New Jersey. The thirteen former British colonies were the first states in the U.S.

Westward Expansion

From 1776 until the mid-1800s, the United States continued to grow westward as new territory was annexed, or added. In 1803, the land that is now Minnesota, Iowa, Missouri, Arkansas, and Louisiana was purchased from France. The Mississippi River forms the eastern borders of these states.

In 1845, Texas was annexed. The Rio Grande forms a natural border between Texas and Mexico.

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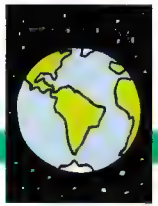
What is the second largest continent?



GEOGRAPHY

1. Australia
2. Africa
3. South America

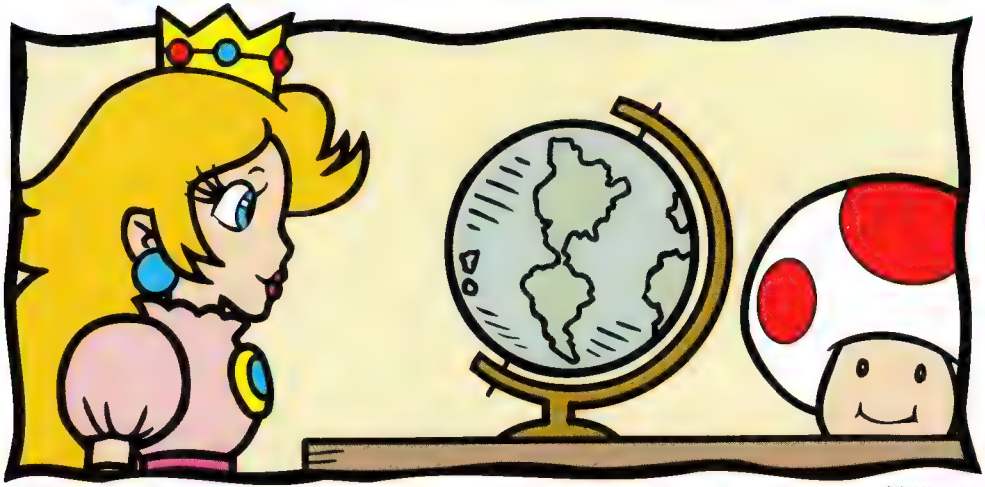


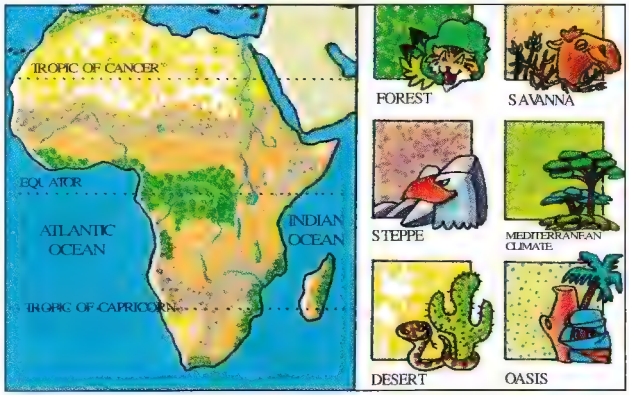
Illustration Gary Fields

©1996 Nintendo

Africa

Africa is bordered by the Atlantic Ocean in the west and the Indian Ocean in the east. It is separated from Europe by the Mediterranean Sea and the Strait of Gibraltar and from Asia by the Gulf of Suez, the Suez Canal, and the Red Sea.

2 Africa is the world's second largest continent.



Africa has many different climates and types of vegetation, from the Sahara desert in the North to dense rain forest at the equator.

Africa is the second biggest continent, after Asia. Some of the oldest human and protohuman fossils have been found in Africa, while Egypt was the birthplace of one of the oldest known civilizations.

Land and Climate

The Sahara Desert, the largest desert in the world, covers the northern portion of the continent. Africa has distinctively straight coastlines, with few natural harbors or estuaries—places where rivers widen as they run into the ocean.

Southwest of the Sahara are arid steppe lands and more fertile savanna. Rainforests cover the eastern part of Africa's midsection, while southern Africa has savanna and steppe land. The Nile River in northeast Africa provides natural irrigation for the land along its banks.

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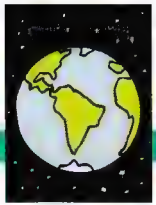
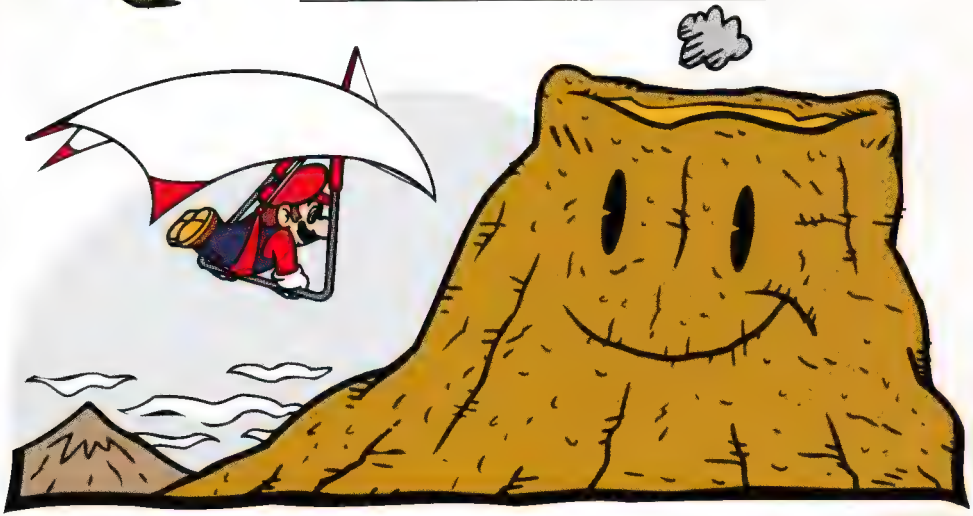
What is the largest active volcano in the world?



GEOGRAPHY

1. Mount Oshima, in Japan
2. Mauna Loa, in Hawaii
3. Mount Etna, in Sicily



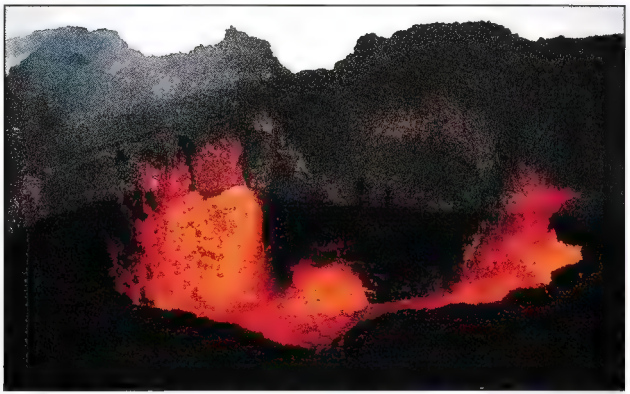
Illustration, Gary Fields

©1996 Nintendo

Mauna Loa

Mauna Loa, meaning "long mountain," stands 13,768 feet (4,169 m) above sea level on the island of Hawaii. It has erupted an average of once every 31 years since 1832.

2 Mauna Loa, in Hawaii, is the world's largest active volcano.



© K. Krafft / Explorer

When lava escapes through a volcano, it is an extremely hot liquid. It hardens to form a type of rock, such as rhyolite, basalt, or obsidian.

A volcano is an opening in Earth's crust through which molten rock flows or is forced out in a violent explosion. The molten rock is called magma while it is below Earth's surface and lava once it escapes. Each time a volcano erupts, the lava released collects and hardens to form first a hill and then a mountain around the opening in Earth's surface. This opening soon forms a crater or deep depression at the top of the mountain.

The crater at Mauna Loa's peak has an area of about 4 square miles (10 sq km) and is 500-600 feet (150-180 m) deep.

Eruptions

Lava flows from Mauna Loa have covered more than 2,000 square miles (5,120 square km) of the island of Hawaii. When it erupted in 1935, U.S. Army planes had to halt a stream of lava headed toward the city of Hilo by dropping bombs in front of it. Major eruptions also occurred in 1950, 1975, and 1984.

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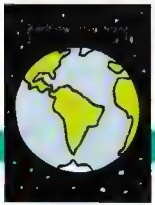
How many active volcanoes are there in the world?



GEOGRAPHY

1. 30
2. 1,400
3. 25,000

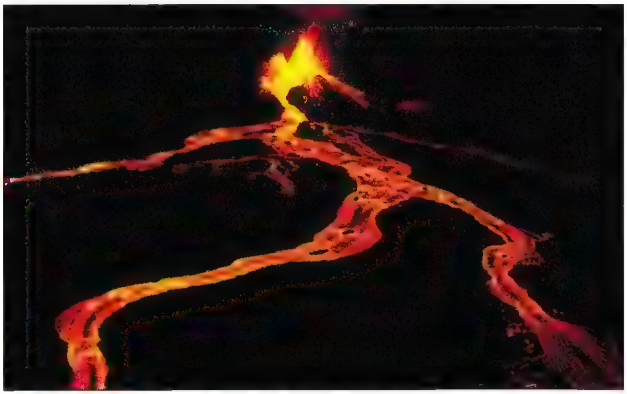
Illustration: Gary Fields

©1996 Nintendo

Volcano

Geologists keep watch over less than fifty of the world's active volcanoes. Only potentially dangerous volcanoes are under surveillance.

There are approximately 1,400 active volcanoes on Earth.



© Len Sirman

It is nearly impossible for geologists to predict the force of an expected volcanic eruption and the direction the lava will flow.

Indications that a volcano is about to erupt include a series of small earthquakes as molten rock, or magma, travels toward Earth's surface, increases in the emission of sulfur dioxide gas, and a swelling of mountain slopes.

Types of Volcanoes

The volcanoes in Iceland and Hawaii are shield volcanoes. This type of volcano releases fluid magmas which collect to form gently sloping mountains. Lava from shield volcanoes hardens into layers measuring 3 to 33 feet (1 to 10 m) thick.

Cinder cone volcanoes are formed when dense magma is released in violent explosions that hurl particles of molten rock high into the air. The particles land to form a small and steep-sided cone around the vent in Earth's surface.

Stratovolcanoes are the result of extremely fluid lava flowing from long fissures, or gaps, in Earth's surface. Some of the world's tallest volcanoes are stratovolcanoes.

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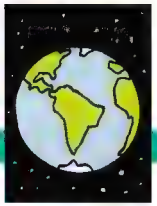
Where is the largest crater in the world?



GEOGRAPHY

1. Indonesia
2. Ecuador
3. Madagascar

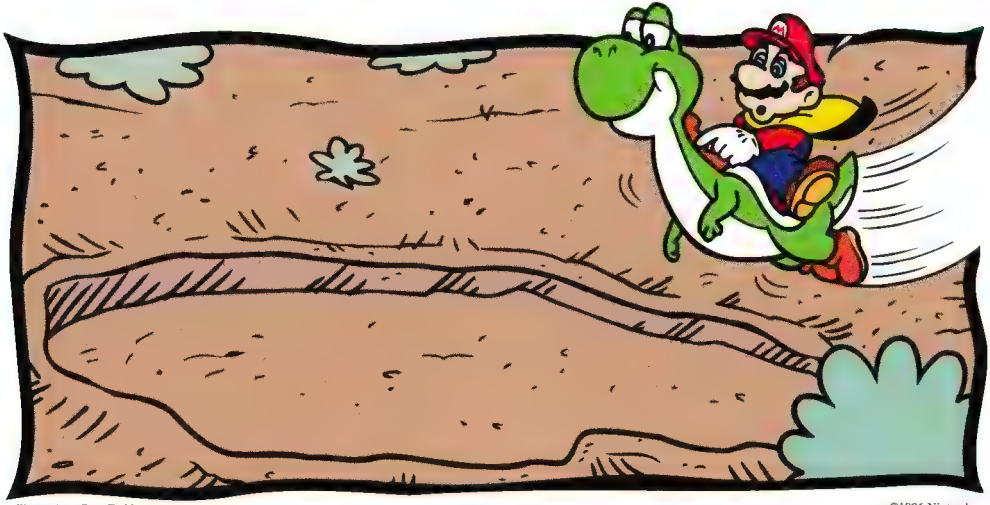


Illustration: Gary Fields

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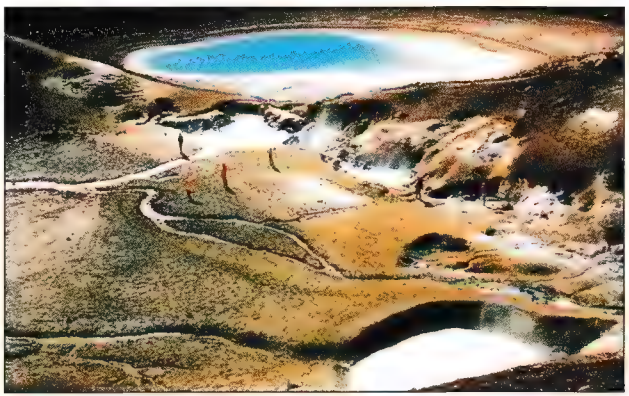
Crater

Located in the Barisan Mountains in north-central Sumatra, an island of Indonesia, Lake Toba is Indonesia's largest lake. It fills a crater, or deep depression, formed by a prehistoric volcano.

1 Lake Toba in Sumatra, Indonesia is the world's largest crater.



© Len Sirman

The island of Iceland was formed by the eruption of undersea volcanoes. Some of Iceland's craters have filled with water to form lakes.

Lake Toba is a saltwater lake covering an area of about 440 square miles (1,140 square km). Lake Toba flows eastward into the Asahan River, an important source of hydroelectric power for northern Sumatra.

Crater Lake in southern Oregon is in the crater of a prehistoric volcano called Mount Mazama. It is the second deepest lake in North America. Near Crater Lake's western edge is Wizard Island, the remains of a small volcano formed after the main volcanic cone was destroyed.

Formation

Craters are formed gradually at the tops of volcanoes, as particles of molten rock thrown into the air during eruptions accumulate to form a cone around the volcano's vent. When a volcano becomes extinct, rainwater that collects in its crater may eventually form a lake.

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D3 054 51-03

What is the capital of Peru?

GEOGRAPHY

1. Lima
2. Bogota
3. La Paz

Illustration Gary Fields

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Lima

Lima (pronounced Lee-ma) is Peru's economic and industrial center. Sixty percent of the country's industries are located in the Lima area.

1 The capital of Peru is Lima.

© G. Boutin / Explorer

Lima is an oasis in the middle of one of the world's driest and coolest low-latitude deserts. The city is bordered by the Andes Mountains on one side and the Peruvian coastal desert on the other.

Peru became independent from Spain in 1821. In 1975, Quechua, an Indian language spoken by about one-half the country's population, was declared the second official language, after Spanish.

Industry

Major Peruvian industries include forestry, agriculture, and fishing. In the Andean Highlands, or Sierra, farmers grow corn, wheat, barley, and potatoes. In irrigated land near the coast, cotton, sugar, and coffee are cultivated.

From 1962 to 1972, Peru's fish catch was the largest in the world. Then the warm El Niño ocean current arrived, causing many of the fish to leave in search of cooler waters. The prosperity of Peru's fishing industry fluctuates with the arrival and departure of El Niño. Peru's soils are rich in silver, copper, zinc, lead, and iron. Peru's coast is lined with textile mills, sugar refineries, paper mills, and automotive and shipbuilding factories.

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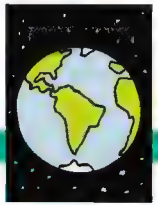
Which Indian city was founded in 1690 as a trading post?



GEOGRAPHY

1. New Delhi
2. Calcutta
3. Madras

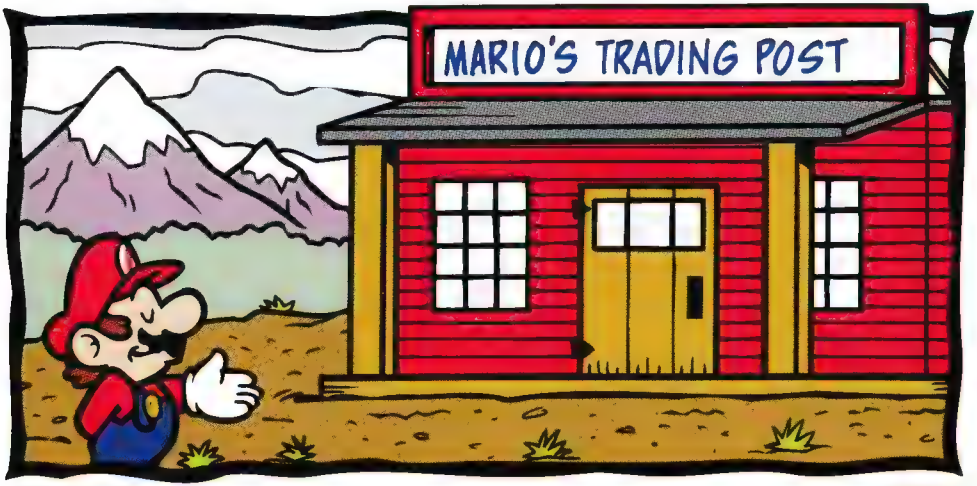


Illustration Gary Fields

©1996 Nintendo

Calcutta

Located in north-eastern India on the eastern bank of the Hooghly River, Calcutta is India's largest metropolitan area. It is one of the world's most crowded port cities.

2 Calcutta was founded in 1690 as a trading post of the British East India Company.

© Geopress / Explorer

The population density—people per square mile—in Calcutta is very high. In less than one generation, over six million refugees settled in the city.

Calcutta is in a perfect location for trade, but its low swamps and hot, humid riverbank and violent weather make its climate less than ideal for the people who live there.

Economic Activity

Calcutta is the world's largest processor of jute, a tough plant fiber used to make burlap and twine. Other important industries include food processing, hosiery and footwear manufacturing, textiles, and the creation of iron and steel products. The chief products sent out of Calcutta's busy port are crude steel and iron, coal, machinery, jute sacking material, sugar, and tea.

One of the most crowded cities in the world, Calcutta is a major educational and cultural center and serves as eastern India's financial headquarters. The city's inhabitants speak Bengali, English, Urdu, and Hindi.

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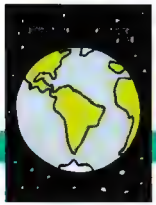
What is the circumference of Earth at the equator?



GEOGRAPHY

1. 24,902 miles (40,077 km)
2. 49,804 miles (80,154 km)
3. 74,706 miles (120,231 km)

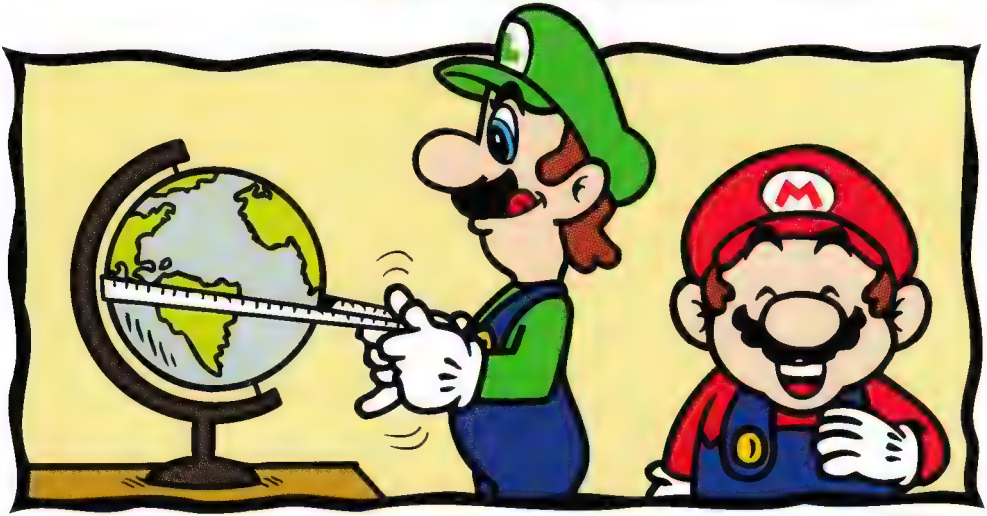


Illustration Gary Fields

©1996 Nintendo

Equator

The equator is an imaginary line dividing Earth into the northern and southern hemispheres. The equator is equidistant from Earth's North and South Poles.

1 **The circumference of Earth at the equator is 24,902 miles (40,077 km).**

© Y. Tabarés

The equator is Earth's longest line of latitude. It is the biggest circle you can draw horizontally around the globe.

Maps and globes of Earth are divided into a grid of vertical and horizontal lines. The vertical lines indicate longitude, while the horizontal lines indicate latitude. These lines are used to measure how far a place is from the equator in degrees, minutes, and seconds. The equator is the horizontal line at 0° latitude.

The Equator and Seasons

Because the Earth is slightly tilted with respect to the Sun, some parts of the planet are illuminated for a longer time each day than others. The northern hemisphere is tilted toward the Sun during late spring, summer, and early fall. At that time, it experiences the warmest weather and longest days. At the same time, the southern hemisphere experiences the coldest time of the year and the shortest days. The southern hemisphere experiences the warmest weather in late fall, winter, and early spring.

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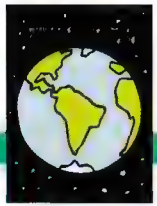
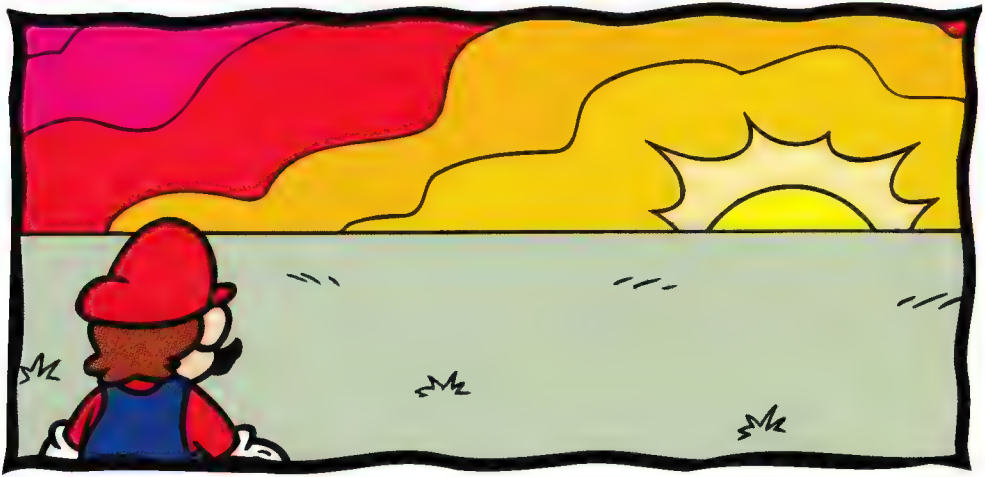
What is the horizon?



GEOGRAPHY

1. Place where Earth seems to meet the sky
2. Point where Earth meets a body of water
3. Foot of a mountain chain



Illustration, Gary Fields

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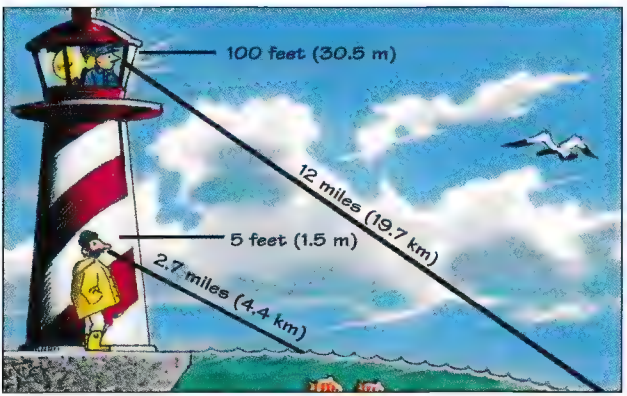
Horizon

If you look as far as you can over flat land or the ocean, you'll notice that after a certain point, you can see no further: The land or water seems to end and meet the sky. This point is known as the horizon.

1 **The horizon is the imaginary line where Earth seems to meet the sky.**



© Y Tabariés

Because of the curvature of Earth, the higher you are, the further away the horizon appears.

It is easiest to see the horizon when you're in a flat, open area like a field, away from tall trees and buildings. A person's distance to the horizon can be calculated by multiplying the observer's height in feet (or meters) by 1.5 (or 12.5). The square root of the result equals the distance to the horizon in miles (or kilometers).

When you're at sea level, the horizon appears closer than it does from the top of a mountain. To a person who is 5 feet (1.5 m) tall, the horizon appears to be 2.7 miles (4.4 km) away. When this person climbs to the top of a lighthouse 100 feet (30.5 m) tall, the horizon appears to be 12 miles (19.7 km) away. To the pilot of a plane flying at an altitude of 6.6 miles (10.7 km) the horizon appears at a distance of 229 miles (369.2 km).

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What two continents do the Ural Mountains separate?

GEOGRAPHY

1. Asia and Europe
2. Europe and Africa
3. Australia and Asia

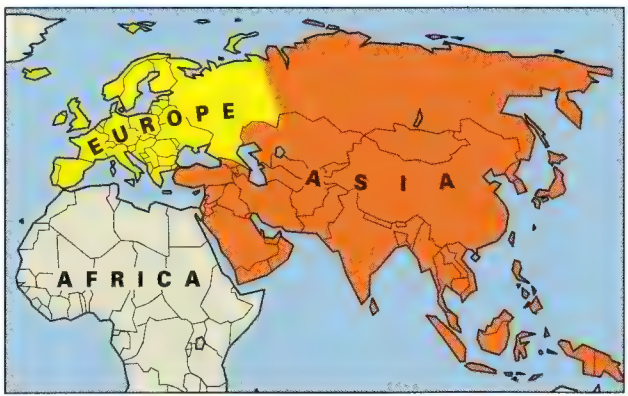
Illustration Gary Fields

©1996 Nintendo

Ural Mountains

The Ural Mountains are located in western Russia and extend about 1,300 miles (2,100 km) from the Kara Sea in the north to the Ural River in the south. The Urals are one of the world's richest mineral-bearing regions.

1 The Ural Mountains separate the continents of Asia and Europe.



© Bob Italiano

Europe's climate is greatly affected by the Atlantic Ocean, neighboring seas, and mountain ranges. Temperatures vary little from season to season along the Mediterranean coast. Seasonal changes in temperature are significant in eastern and central Europe.

The Ural Mountains can be divided into five major sections. The farthest north are the Polar Urals, running 240 miles (390 km) from northeast to southwest. Just south of the Polar Urals lies the highest part of the range, the Nether-Polar Urals. The tallest peak of this section is Mount Narodnaya, rising to 6,217 feet (1,895 m). The peaks of the third section, the Northern Urals, rise from 3,000 to 5,000 feet (900 to 1,500 m). Most of the peaks of the Central Urals are no higher than 1,600 feet (490 m). The Southern Urals generally lie below 4,000 feet (1,220 m).

Mineral Resources

More than 1,000 types of minerals have been found in the Ural Mountains.

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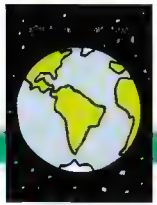
What is cartography?



GEOGRAPHY

1. Population count
2. Study of mountain formation
3. Mapmaking

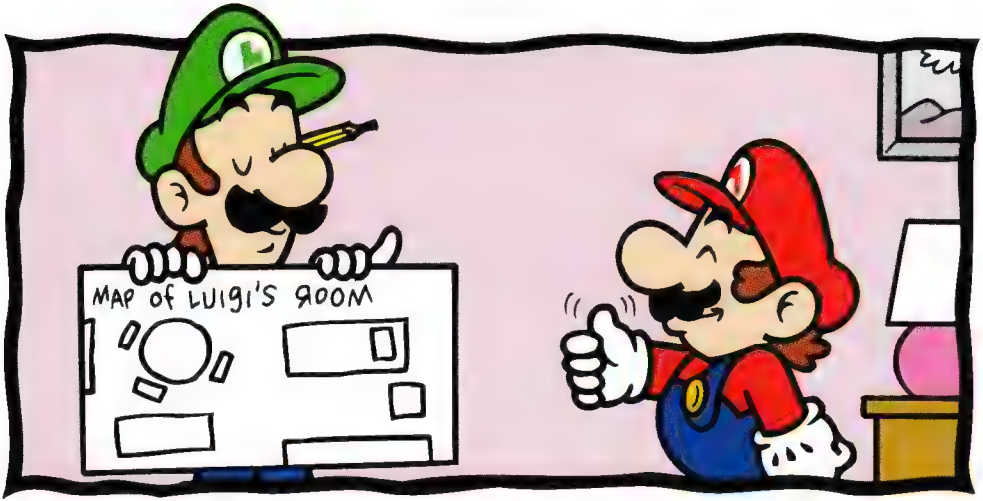


Illustration Gary Fields

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Cartography

In prehistoric times, maps were made to show hunting and fishing territories. These early maps were very rough. As mapmaking techniques were developed and refined, maps became more accurate and reliable.

3 Cartography is the art and science of mapmaking.

© Science VU / Visuals Unlimited

This regional map of the upper midwest, mid-atlantic and northeastern United States demonstrates the cartographer's skill.

Today, cartographers create maps on computers based on aerial photographs of Earth. They also use data from traditional ground surveys. After gathering this information, cartographers enter points on a grid of lines to represent key features, such as roads, rivers, and cities.

Types of Maps

There are many different types of maps. Relief maps are three-dimensional models of land. Made from plastic, clay, or plaster of paris, relief maps are widely used in military and engineering planning.

Topographic maps indicate the natural features of land, such as rivers and mountains. They also show political boundaries, including city limits and the borders between countries.

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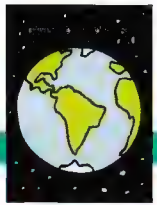
Are there any unexplored regions of Earth?



GEOGRAPHY

1 No, all areas on Earth have been explored.

2 Yes, there are still unexplored areas on Earth.

Illustration Gary Fields

©1996 Nintendo

Unexplored Areas

Although it is now possible to photograph any part of Earth by satellite, there are still parts of the planet that humans have never visited. Vast desert regions and much of Antarctica have never been explored.

2 Yes, there are still unexplored areas on Earth.

© R. Harding / Explorer

Antarctica was mostly unexplored until the 19th and early 20th centuries, when numerous expeditions visited the continent.

One unexplored area is Canning Basin, a vast, arid region of northwestern Australia. Covering about 150,000 square miles (400,000 sq km), Canning Basin consists primarily of parallel sand dunes and rare tufts of spiny desert grass.

Rub' al-Khali is a desert covering about 250,000 square miles (650,000 sq km) in Saudi Arabia. The desert's name means Empty Quarter in Arabic. Rub' al-Khali desert is almost completely uninhabited and mostly unexplored.

Antarctica

Because of its distance from the other continents, Antarctica was not discovered until the early 1800s. Expeditions from many different countries visited Antarctica from the late 1880s until the early 20th century.

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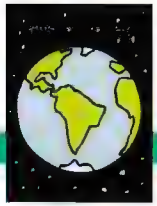
What is the Richter scale?



GEOGRAPHY

1. Device for weighing metal ores
2. System for measuring earthquake magnitude
3. Method of determining storm intensity

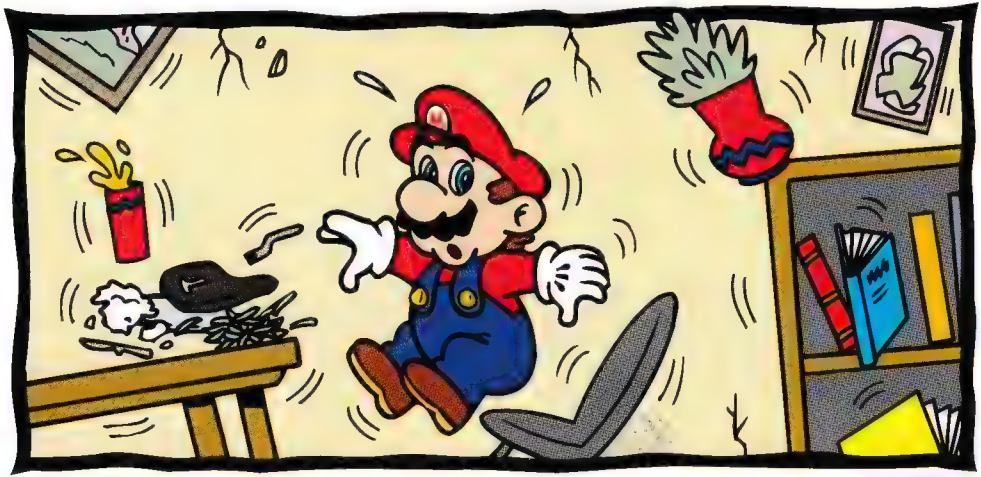


Illustration Gary Fields

©1996 Nintendo

Richter Scale

The Richter scale was developed in 1935 by American seismologist Charles Francis Richter. It measures the energy released by earthquakes.

Each year, there are approximately 800 earthquakes measuring 5 to 6 on the Richter scale. There are about 50,000 quakes of magnitudes 3 to 4, and only about one measuring 8 to 9.

Until 1979, seismologists believed that quakes could not exceed 8.5. Since that time, the scale has been refined, and more accurate methods for measuring earthquake magnitude have been developed. Today, 9.5 is accepted as the limit.

2 The Richter scale is a system for measuring the magnitude of earthquakes.

© Saudade Pictures / Jerrican

Weak masonry and plaster work crack during earthquakes measuring 6 or higher on the Richter scale.

Predicting Earthquakes

Seismologists are getting better at predicting when earthquakes will occur. In 1975, the magnitude 7.3 quake in Haicheng, China, was predicted from a series of weaker foreshocks in the area that had begun about five years earlier. Other possible clues of an impending quake include bulging or tilting of the ground, changes in Earth's magnetic field, variations in the water level of wells, and even changes in animal behavior.

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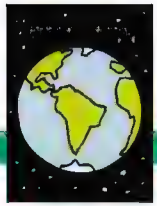
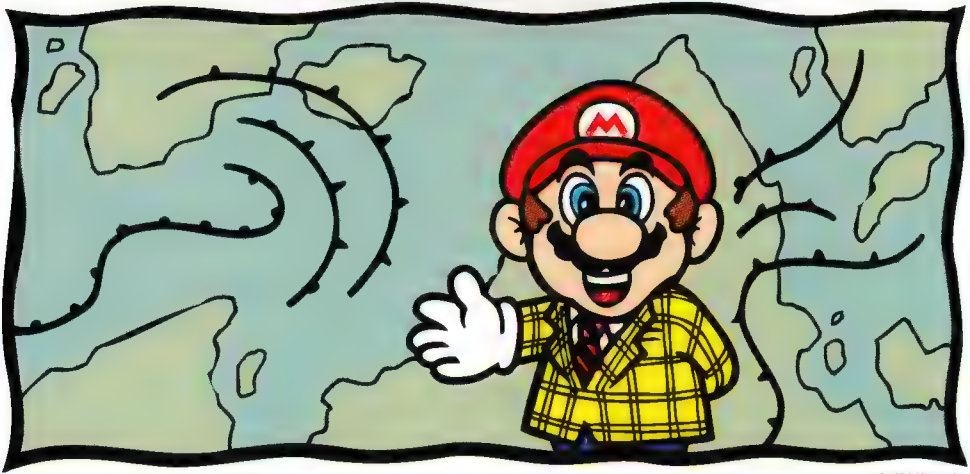
What are isobars on a weather map?



GEOGRAPHY

1. Arrows indicating low pressure
2. Lines linking areas of equal barometric pressure
3. Lines showing the path of a storm



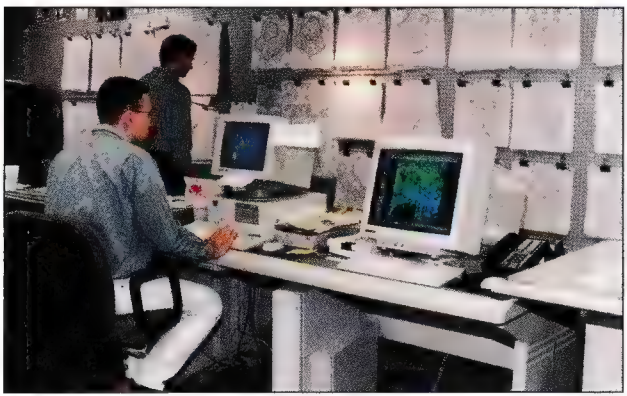
Illustration, Gary Fields

©1996 Nintendo

Isobar

Weather conditions are directly related to barometric pressure. For this reason, weather maps indicating barometric pressure are useful tools for weather prediction.

2 **Isobars are lines drawn on a weather map linking areas of equal barometric pressure.**



© National Weather Service

Maps and computers help meteorologists more accurately predict upcoming weather.

Statistical information on weather conditions is collected from a series of weather stations and satellites spread over a given region. This information is entered into a computer, which incorporates it into a map. Weather maps are interpreted by meteorologists, or weather forecasters.

Interpreting Weather Maps

Meteorologists follow three steps in interpreting weather maps: observation and analysis; extrapolation to determine possible fluctuations in atmospheric conditions; and prediction. Using current technology, meteorologists are able to predict specific weather events about 5 days in advance. In some cases, accurate 30-day forecasts of temperature and precipitation—rain or snowfall—have been obtained.

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What is a fjord?

GEOGRAPHY

1. Narrow passage of the sea
2. Hiking trail through the mountains
3. Forest of tall pines

Illustration: Gary Fields

©1996 Nintendo

Fjord

Fjords are usually shallow at the point where they branch off from the sea. They are deepest inland. Many of the world's fjords are located along the coasts of Norway.

1 **A fjord is a narrow passage of the sea that extends deep inland.**

© Len Sirman

Norway's coasts are lined with deep fjords. Smaller fjords branch off from larger ones.

Norway's longest fjord, the Sognafjorden, projects about 112 miles (180 km) inland and reaches a depth of 4,290 feet (1,308 m) in some spots. Canal Messier, a fjord in Chile, is 4,167 feet (1,270 m) deep. Fjords can also be found along the coasts of New Zealand, Greenland, Iceland, Canada, Alaska, Maine, and southern Argentina. Sea lochs or firths, found along the coasts of Great Britain, are small inlets very similar to fjords.

Formation

Geologists believe that fjords were formed in prehistoric times, when glaciers carved deep, U-shaped valleys into the coastline. These hollowed-out areas were flooded with water from the nearby ocean. Many fjords are bordered by steep cliffs with impressive waterfalls.

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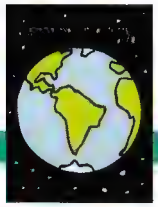
What is alluvium?



GEOGRAPHY

1. Ore found in caves
2. A type of volcanic rock
3. Material deposited by rivers

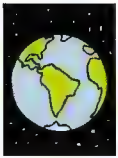
Illustration Gary Fields

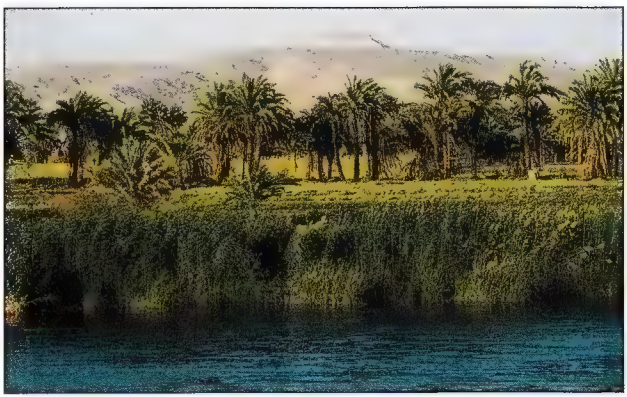
©1996 Nintendo

Alluvial Deposits

The water in rivers carries suspended particles of silt, sand, clay, gravel, and organic matter. This material, called alluvium, is left behind when a river overflows its banks or slows down.

3 Alluvium is the material deposited by rivers.





© P. Roy / Explorer

Alluvium deposited by the Nile River in Egypt makes the surrounding land very fertile.

Alluvium is commonly deposited in places where steep, fast flowing mountain streams enter quiet lakes or flow into an area of flatter land. As the flow of water slows, the river can no longer carry heavy sediments.

Alluvium deposits yield very fertile soils in floodplain and delta areas. Alluvial deposits in some regions contain platinum, gold, or gemstones. Most of the world's supply of tin ore, or cassiterite, is found in alluvial deposits.

Alluvial Fans

Alluvial deposits that gradually accumulate into gently sloping, cone-shaped structures are called alluvial fans. Larger, coarser materials, including gravel and boulders, are deposited first, at the head of the alluvial fan. Finer silts and sands are deposited further into the floodplain. Fans form most often in closed desert basins surrounded by mountains.

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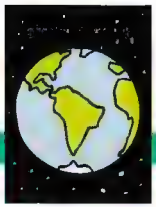
What are the meanders of a river?



GEOGRAPHY

1. Sharp curves in the river bed
2. Areas of accelerated water flow
3. Places where streams join the river

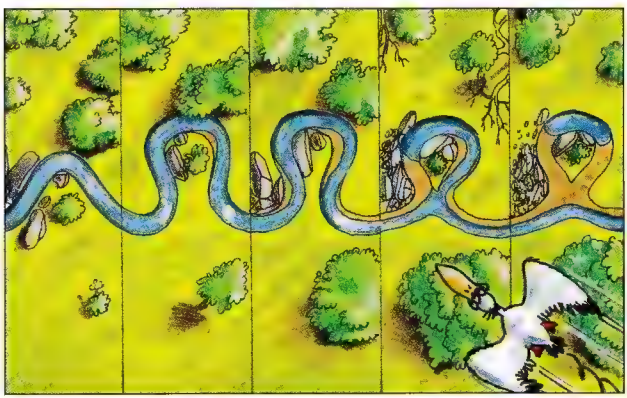
Illustration: Gary Fields

©1996 Nintendo

Meander

A river's course is determined by the slope of the land and the objects in its path. Rivers flow down steep grades and curve around big obstacles, such as hills and boulders.

1 **The meanders of a river are sharp curves in the river bed.**



© Y. Tabarlés

Because of fluctuations in the speed and force of flowing water, a river's course may change over time. A cutoff may form where there was once a meander.

A river shapes its own path, or channel, of flow. River channels are usually wider than the rivers themselves, because channel size is established during infrequent flooding that causes significant erosion to riverbanks.

The Role of Rivers

Rivers are responsible for most of the gradual erosion of mountains and other land masses. They also play a vital role in the economy of the regions through which they flow. Before extensive road systems, automobiles, and trucks, rivers were the main travel routes and points of connection between cities. Rivers are still important as commercial routes, supporting a great deal of barge traffic. Their water is used to irrigate cropland, and their energy may be harnessed for hydroelectric power.

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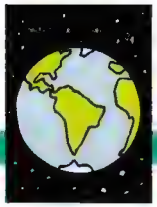
How are valleys formed?



GEOGRAPHY

1. Erosion
2. Earthquakes
3. Flooding

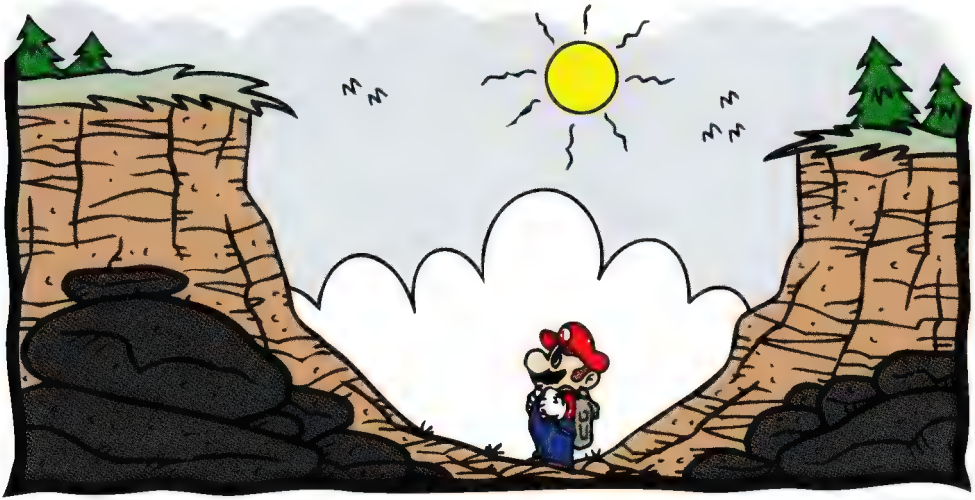


Illustration Gary Fields

©1996 Nintendo

Valley

Over time, glaciers and flowing rivers carve valleys between mountains. Silt and other materials left behind by glaciers and rivers can make the valley land fertile.

1 Valleys are formed by erosion.

© P. Roy / Explorer

The valley in this picture may have been formed thousands of years ago by a glacier moving through the mountains.

Natural erosion is constantly changing the Earth's surface. Wind and water slowly carve away, or erode, rock. In dry regions, the top layers of rock expand in the heat and crumble off, exposing lower layers.

Rain causes chemical and mechanical erosion. In chemical erosion, the natural acid in rainwater dissolves some minerals and causes others to decompose. In mechanical erosion, rainwater seeps into the cracks and pores of rocks. When the water freezes, it expands, splitting the rocks apart.

Running water in streams and rivers carries sand and rocks that scour the bed and banks.

Glaciers sweep up any loose material in their path. Sand and rocks become embedded in the bottom and sides of a glacier. They work like sandpaper, grinding against and wearing down the rock that forms the walls and floors of mountain valleys.

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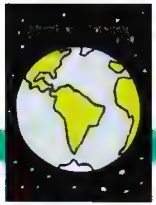
Which state is called the Bluegrass State?



GEOGRAPHY

1. Arkansas
2. Idaho
3. Kentucky

Illustration: Gary Fields

©1996 Nintendo

Kentucky

Frontiersman Daniel Boone was one of Kentucky's early settlers. He blazed a trail through the Cumberland Gap to the new territory.

3 Kentucky is nicknamed the Bluegrass State.

© KY Department of Travel Development

A bluegrass Kentucky horse farm, a beautiful and familiar sight in the Kentucky countryside.

In its early days, Kentucky was part of Virginia, which lies on Kentucky's eastern border. They were separated by the Cumberland Mountains, which made traveling into Kentucky difficult. In 1750 a path through the mountains was found. It was called the Cumberland Gap. In 1775, Daniel Boone marked the trail so people could follow it easily, and settlers began moving west into Kentucky. After the American Revolution, the people of Kentucky asked Virginia for permission to become a separate state. In 1792, Kentucky became our 15th state. Frankfort is its capital.

Bluegrass and Bourbon

Kentucky is famous for blue-tinted, long-stemmed grass, and for its distilleries which make Kentucky bourbon whiskey. It's also known for Mammoth Cave National Park, and for the Kentucky Derby, America's most famous thoroughbred horserace, run yearly at Churchill Downs in Louisville.

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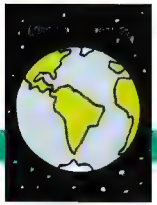
Which state is shaped like a mitten?



GEOGRAPHY

1. Michigan
2. Oklahoma
3. Utah

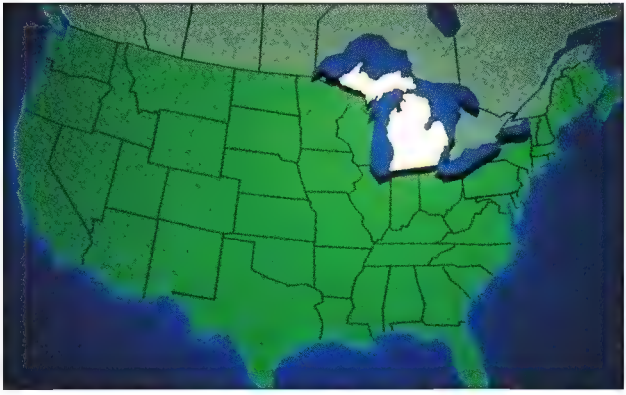
Illustration Gary Fields

©1996 Nintendo

Michigan

The state of Michigan is two land masses, or peninsulas, separated by water. The Mackinac Bridge connects them.

1 The lower peninsula of Michigan is shaped like a mitten.



© Michigan Travel Bureau

Michigan's distinctive mitten shape makes it easy to identify on a United States map.

Michigan is the home of America's automobile industry. The "Big Three" automakers—Ford, General Motors, and Chrysler—all are headquartered in Michigan, and many of their cars are built there.

Motown Sound

Detroit, Michigan's largest city, is nicknamed "Motor City." When Berry Gordy, Jr., an African-American record producer, opened a recording studio in Detroit he called the company Motown in honor of the Motor City. Motown groups, such as The Supremes and The Temptations, sang rhythm-and-blues or soul music. This dance music with rich production and background harmony was hugely popular in the 1960s, and today people still love the "Motown sound."

Michigan Facts

The name Michigan comes from the Chippewa Indian words for "large lake." The state is surrounded by the Great Lakes—Huron, Ontario, Michigan, Erie, and Superior.

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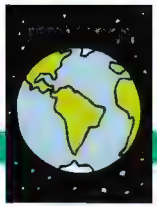
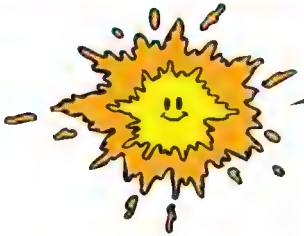
Which is the smallest state in the U.S.?



GEOGRAPHY



1. Alaska
2. Kentucky
3. Rhode Island

Illustration: Gary Fields

©1996 Nintendo

Rhode Island

Rhode Island was one of the 13 original American colonies. It's located in the northeastern United States, bordered by Massachusetts and Connecticut.

3 Rhode Island is the smallest state in the U.S.

© RI Tourism Division

The Rhode Island Statehouse in Providence is made of white Georgia marble.

Roger Williams founded the colony of Rhode Island in 1636 as a place where people of all faiths could find religious freedom. The first Baptist church and the first synagogue in the U.S. both were in Rhode Island.

Packed With People

Rhode Island covers just 1,214 square miles (3,144 sq km), but even though it's small, Rhode Island is the second-most densely populated state in the country. Most people live in or around the capital city, Providence.

Catch of the Day

Since it's surrounded by water, Rhode Island naturally has a nautical history. Providence is one of America's original port cities. Newport is a resort famous for hosting the America's Cup yacht races. Rhode Island is also known for its seafood, especially the unusual hardshell clams, called quahogs, that are a local specialty.

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Which U.S. state has the smallest population?

GEOGRAPHY

1. Alabama
2. Nevada
3. Wyoming

Illustration Gary Fields

©1996 Nintendo

Wyoming

Even though it's the ninth largest state geographically, Wyoming is last on the list in population —and in alphabetical order!

3 Wyoming has the smallest population of any U.S. state.

© Wyoming Division of Tourism

The Grand Tetons and the Snake River at sunset.

Wyoming is part of America's "wild west" heritage. The state's rugged, dry territory was hard to farm, but Wyoming's grasslands were perfect for cattle ranching. After the Civil War, the territory became "cowboy country" with sprawling ranches that covered thousands of acres. One of Wyoming's nicknames is the Cowboy State.

History of Equality

Wyoming is also called the Equality State. It was the first territory to grant women the right to vote, and the first state to elect a woman as governor.

Wyoming Facts

Wyoming was declared a U.S. territory in 1868, and it became the 44th U.S. state in 1890. Cheyenne, the state's largest city, is its capital. Wyoming is best known as the home of Yellowstone National Park, the first U.S. national park.

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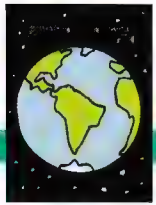
What mountain chain has the world's highest peaks?



GEOGRAPHY

1. Andes
2. Himalayas
3. Urals

Illustration Gary Fields

©1996 Nintendo

Himalayas

Mount Everest, the world's highest mountain, is in the Himalayas. It rises 29,028 feet (8,853 m) above sea level.

2 The Himalayas are the highest mountain range on Earth.

© Boisvieux / Explorer

In Sanskrit, the name Himalayas means "home of snow."

Asia's snow-covered Himalayas stretch from Pakistan east through India, Tibet, Nepal, and Bhutan. Nine of the world's 14 highest peaks are in the Himalayas. Naturally, the Himalayas fascinate mountaineers, but the brutal cold at their upper reaches makes them dangerous to climb.

Making Mountains

The formation of the Himalayas began about 38 million years ago and continued until about 7 million years ago. The mountains grew as a result of violent earthquakes which caused Earth's surface to rise, or uplift, and fold. Rivers etched their way into deep valleys that run through the mountains, draining off the water from rain and melting snow. India's Indus and Brahmaputra rivers start in the Himalayas.

The Himalayan region is still prone to severe earthquakes, which makes geologists think that the Himalayas are still in the growth process.

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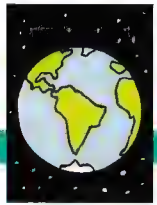
Which forms valleys?



GEOGRAPHY

1. Rivers and glaciers
2. Volcanic eruption
3. Meteor showers

Illustration Gary Fields

©1996 Nintendo

Valleys

Rivers form valleys that are V-shaped. Glaciers form valleys that are U-shaped.

1 Rivers and glaciers form valleys.

© Marge / Sunset

People have historically settled in valleys because they provide an available water supply and fertile soil.

Rivers form in mountains when rainwater, melted snow, or water from an underground spring collects. Sometimes the collected water bursts forth in the form of a waterfall or cascade at the head of the river.

Carving a Valley

As river water flows through mountains it wears down the rock below it. Over time, the river carves its path deeper and deeper into the rock surface, creating a valley. The water cuts down and sideways, widening its bed.

On level ground, the river's flow is less forceful. It's not strong enough to cut through all the rock below it. Instead it bends around large, hard rocks. Bends in a river are called meanders.

Glacial Valleys

Icy glaciers that form in mountains can also carve valleys in Earth's surface. As they move slowly down the mountains they chip away at the rock below them, leaving U-shaped valleys in their wake.

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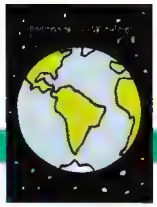
What do geologists call an erratic?



GEOGRAPHY

1. A misplaced boulder
2. An underwater earthquake
3. A volcano in a cold region

Illustration: Gary Fields

©1996 Nintendo

Glacial Movement

Like Hansel and Gretel's trail of bread-crumbs, glaciers leave markers behind as they cut paths across the land.

1 To geologists, an erratic is a boulder that seems to be misplaced.

© Len Sirman

Boulders with a composition different from the rocks that surround them might be erratics—rocks carried from another region by glaciers.

Glaciers form in mountains from layers of ice that melt and refreeze. A glacier's immense weight keeps the ice at its base from freezing completely. On this slightly liquid base, a glacier inches downhill taking rocks and debris with it.

Telltale Signs

The weight of the glacier can carve a U-shaped valley, or glacial trough, in the ground. Following the length of the trough can show a geologist the direction a glacier traveled. Grooved stripes, or striations, in rock also show where a glacier passed by, dragging debris across the rocks on the ground. Sometimes glaciers drop boulders picked up along their travels. Geologists call these transplanted boulders erratics because they occur in unexpected places. For example, red jasper erratics found in Kentucky had been carried by glaciers from north of Lake Huron, about 600 miles (1,000 km) away!

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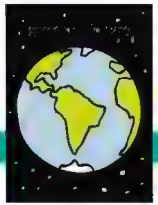
What was the original function of the Tower of London?



GEOGRAPHY

1 Fortress

2 Cathedral

3 Museum

Illustration Gary Fields

©1996 Nintendo

Tower of London

William I of England—William the Conqueror—built the Tower of London in 1067 to protect London from enemy attack.

1 The Tower of London was built as a fortress.

© Ken Straiton / Explorer

In the 16th century, Henry VIII had two of his wives beheaded at the Tower of London. Today, tourists go to see England's Crown Jewels and to climb the infamous Bloody Tower.

Since London is England's capital, the Tower was an important line of defense. Rulers who followed William expanded and improved it. Later they decided the Tower that kept enemies out could be used to keep enemies in. So, the Tower of London became a prison.

Traitor's Gate

The Tower's riverside entrance, once used by prisoners, is called Traitor's Gate. White Tower was the first and largest tower on the complex, but Bloody Tower is the most notorious. It's where Sir Walter Raleigh was imprisoned in the 17th century, and probably where Richard III had his two young nephews murdered.

Glittering Jewels

The Tower was so secure, it was used as the Royal Mint for more than 500 years. England's Crown Jewels are still kept there. Now they're the Tower's main tourist attraction.

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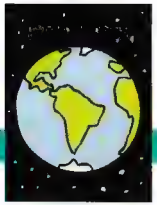
In which mountain range is Mount Aconcagua?



GEOGRAPHY

1. Alps
2. Andes
3. Appalachians

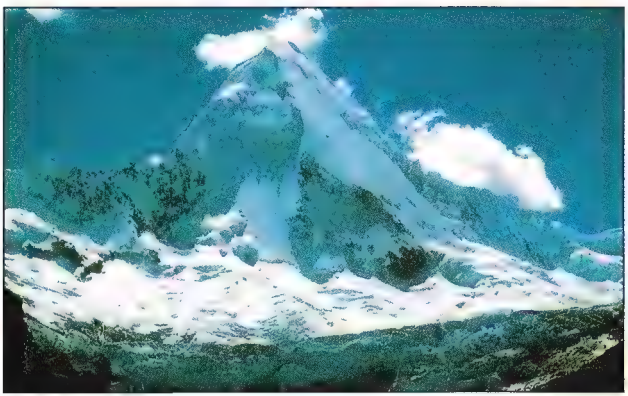
Illustration Gary Fields

©1996 Nintendo

Andes

The Andes are the main mountain range of South America. They reach from Lake Maracaibo in Venezuela to Tierra del Fuego at the southern tip of the continent.

2 Mount Aconcagua is the highest peak in the Andes.



© Len Sirman

Mount Aconcagua is the highest point in the Andes. It's in the cold, snowy, southern portion of the mountain chain.

Located on the western coast of South America, the Andes are the longest mountain chain on Earth. They cover more than 5,000 miles (8,045 km) and stretch through seven countries. Aconcagua is the highest point in the range—22,831 feet (6,959 m) above sea level.

Varied Climates

In the northern part of the Andes, near the Equator, the climate is hot and humid—perfect for growing coffee and sugar cane, which are the main crops of Colombia. The range continues south through Ecuador and into Peru and Bolivia, where it flattens into a plateau called the altiplano, or high plain. This is where Lake Titicaca, the largest freshwater lake in South America is located. Here the temperature becomes cooler and drier. At the southern end of the range, nearing the South Pole, the Andes are cold and snowy. This is where Aconcagua rises, between Argentina and Chile.

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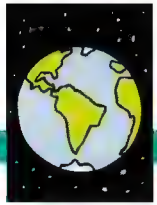
What causes a river to flood?



GEOGRAPHY

1. Severe rain
2. Toxic waste
3. Excess rocks in the river bed

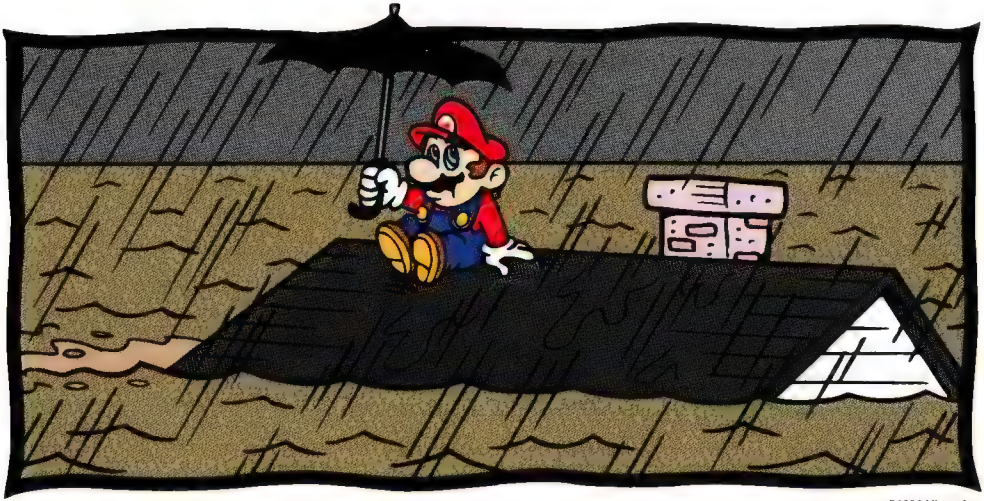


Illustration: Gary Fields

©1996 Nintendo

River Floods

Rain and melting snow feed rivers. Without this constant water supply, many rivers wouldn't exist.

1 Rivers may flood during severe rainstorms.

© A. Duclos / Gamma

A river that overflowed its banks flooded this town in France. Severe rainstorms can cause rivers to flood.

Rivers usually begin high in the mountains. If the rocky terrain of the mountains doesn't absorb rainwater or melting snow, the water begins to flow from the hills to the lowlands in a river. A steady flow of rain keeps rivers alive. Some rivers dry up from time to time and start to flow again when it rains or when snow melts. Others are continually fed by underground streams and supplemented by rain and snow.

Overflow

Over time, the path of the water carves out a depression, or bed, that carries the flow. But if the flow increases a lot over a short period of time, the river bed might not be able to handle it. That's when a river can overflow its banks causing a flood. Severe rainstorms, which deliver a lot of rain in a short period, often cause rivers to flood. To prevent rivers from flooding, their banks may be built up with concrete or dirt mounds, called levees, to contain the river water.

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Why do people recycle?

GEOGRAPHY

1. Because the government says they have to
2. To reduce the amount of solid waste in garbage dumps
3. To save endangered species

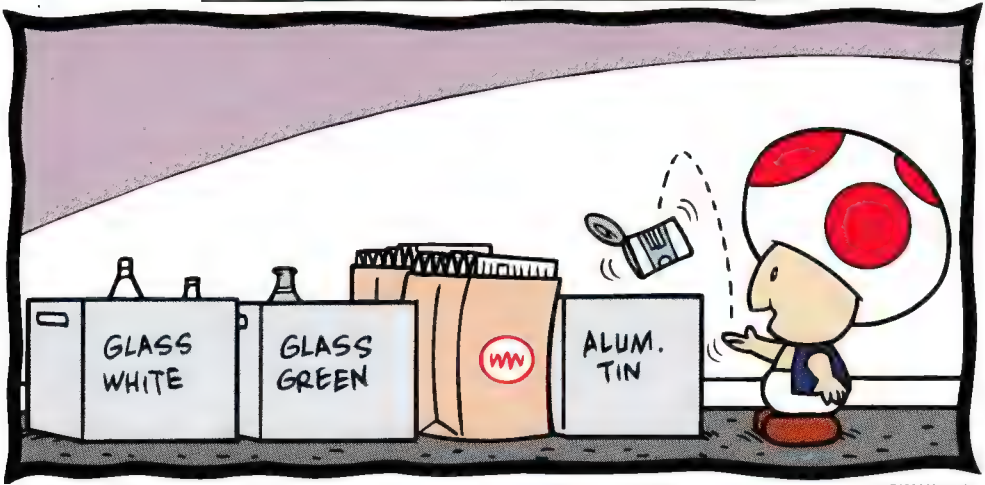

Illustration: Gary Fields

©1996 Nintendo

Recycling

The process of recycling means using things more than once. Glass, aluminum, paper, and plastic can be recycled.

2 Recycling reduces the amount of solid waste in garbage dumps.

© A. Felix / Explorer

Recycling helps reduce the amount of waste in our garbage dumps. How much of this garbage do you think could have been recycled?

People create a lot of garbage. Every time you drink a soda or read a newspaper you're left with something that could be thrown away. But if we throw out everything after we use it once, soon there won't be any more room on Earth for all our garbage! That's why many people recycle bottles, cans, and newspapers.

In recycling, glass bottles are smashed into little bits then melted down to make new glass. The process costs less and uses less energy than making glass from scratch. Plastic bottles and aluminum cans are also crushed and melted to make new items. Recycled newspapers are used to make new paper.

Use it Twice

There are other ways to recycle, too. Reuse plastic bags to carry your lunch to school or to take a wet bathing suit home from the swimming pool. Paper bags make good covers for school books. And plastic containers, like the ones from the deli, are great for storing stuff.

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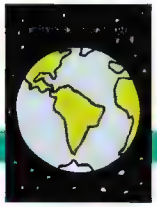
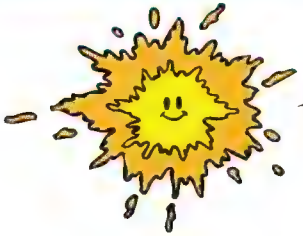
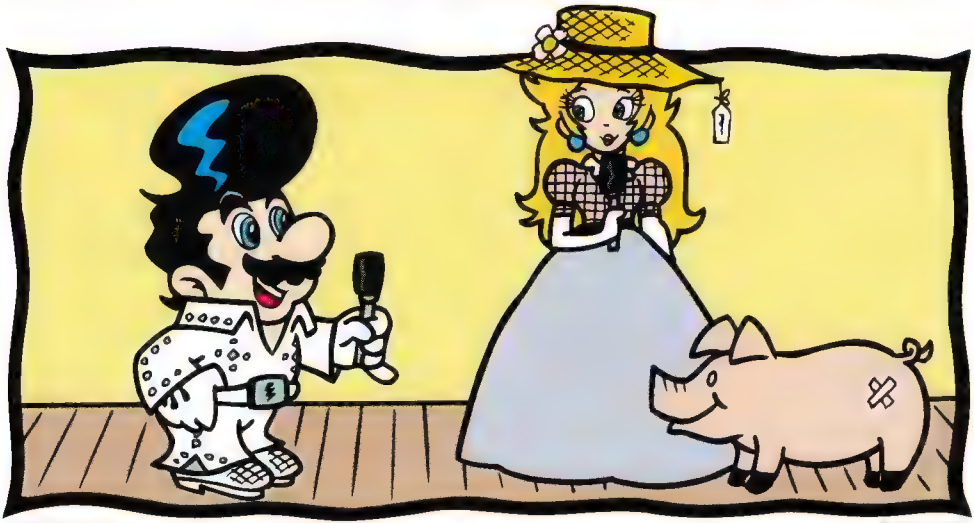
In which state would you find the Grand Ole Opry and Graceland?



GEOGRAPHY



1. Mississippi
2. South Carolina
3. Tennessee



Illustration, Gary Fields

©1996 Nintendo

Tennessee

Nashville, the state capital, is known as the home of country music. The Grand Ole Opry, in Nashville, is a historic theater famous for country music shows.

3 The Grand Ole Opry and Graceland are in Tennessee.

© Superstock

Nashville is home to the Grand Ole Opry, where many of the giants of country music have performed.

Tennessee is also known as the former home of rock-and-roll singer Elvis Presley. Graceland, his mansion, is now a museum in Memphis, Tennessee. Of Tennessee's natural wonders, the best-known are the Great Smoky Mountains on the North Carolina border.

State History

After the Revolutionary War, Tennessee became part of the state of North Carolina. But its settlers wanted a state of their own. North Carolina gave up the territory, and in 1796 Tennessee became our 16th state. In the War of 1812, so many Tennesseans volunteered for battle that the state was nicknamed the Volunteer State.

Home of Presidents

Andrew Jackson, our 7th president, lived in Tennessee. His former home, The Hermitage, is now a museum. James K. Polk, our 11th president, and 17th president Andrew Johnson also lived in Tennessee.

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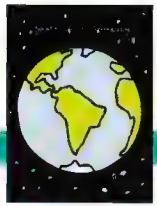
Which are the Low Countries?



GEOGRAPHY

1. Denmark, Norway, Sweden
2. England, Ireland, Scotland, Wales
3. Belgium, Luxembourg, The Netherlands

Illustration: Gary Fields

©1996 Nintendo

Low Countries

The Low Countries are sometimes called the Benelux nations, from the first letters of their names ("Be" for Belgium, "Ne" for Netherlands, "Lux" for Luxembourg).

3 Belgium, Luxembourg, and The Netherlands are the Low Countries.

© A. Saucez / Explorer

After reclaiming their farmland, people in the Low Countries built an intricate system of canals that flow through cities and towns. At one time, they were the main transportation routes throughout the region.

The Low Countries are in northwestern Europe along the North Sea. They're called the Low Countries because much of their land is below sea level. To make the land useful for farming, people drained it, then built sea walls and barriers called dikes to keep the North Sea from flooding the land again.

Trade Partners

While many European neighbors, such as France and England, have a history of warfare, the Benelux nations have almost always been allies. In fact, Belgium and Luxembourg formed one of Europe's first trade partnerships in the 1920s. The three Low Countries were also among the first to join the North Atlantic Treaty Organization, or NATO, after World War II. NATO headquarters is in Brussels, the capital of Belgium.

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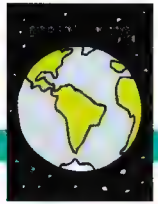
Which is colder, the North Pole or the South Pole?



GEOGRAPHY

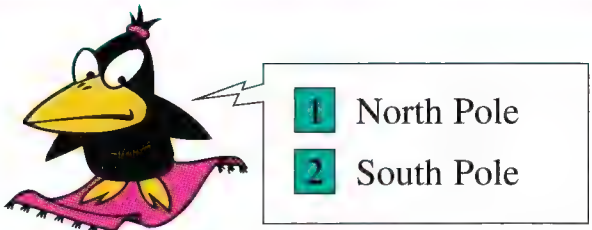


Illustration: Gary Fields

©1996 Nintendo

Polar Regions

The polar regions are located at Earth's top and bottom. The North Pole is called the Arctic, and the South Pole is the Antarctic.

2 The South Pole is much colder than the North Pole.

© R. Baumgartner / Explorer

There's little vegetation at the South Pole. Some plants, like these, survive in the Arctic.

The coldest temperature on Earth was reached at a laboratory and research station in Antarctica. In July 1983, the thermometer read -126°F (-89.6°C). (Remember July is a winter month in the southern hemisphere.) Winter at the North Pole generally reaches temperatures as low as -89°F (-67°C).

Land and Sea

The South Pole is colder than the North Pole partly because it's much bigger. Antarctica is about twice the size of the Arctic. Plus, Antarctica is a giant land mass while the North Pole region is mostly covered by water which keeps temperatures slightly higher.

Elevation

In addition, the South Pole is colder because it's at a higher elevation than the North Pole. Most of the land at the North Pole is near sea level. The South Pole is covered with ice that can be 15,000 feet (4,500 m) thick—about ten times taller than the world's tallest skyscrapers!

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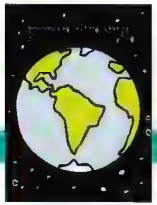
What is a grotto?



GEOGRAPHY

1. A small cave
2. An underground stream
3. A radioactive rock formation

Illustration: Gary Fields

©1996 Nintendo

Caves

Chemical reactions produced by water flowing through limestone create caves beneath Earth's surface. Small caves are called grottoes. Large caves are caverns.

A grotto is a small cave or cavern.

© J.-C. Gerard / DIAF

Here's an easy way to remember which cave formation is which: Stalactites (the word with a "c") hang from the ceiling. Stalagmites (the word with a "g") grow from the ground.

The chemical composition of limestone helps water erode the rock to form caves. As the water seeps into the ground it picks up decaying plants and animal matter that mix with the water to form carbonic acid and calcium carbonate which help water erode the limestone.

Rock Sculpture

Inside the cave, the chemical reactions continue, so the size and shape of the cave is forever changing. The reactions cause weird and beautiful rock formations to grow inside the cave. As limestone melts and drips from the cave ceiling it forms hanging icicle-like formations called stalactites. Calcium-rich water that drips to the ground builds up into pointed formations called stalagmites. Sometimes the structures join together to form natural columns within the cave.

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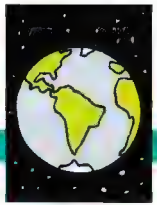
In which state would you find the United States Air Force Academy?



GEOGRAPHY

1. California
2. Colorado
3. Florida

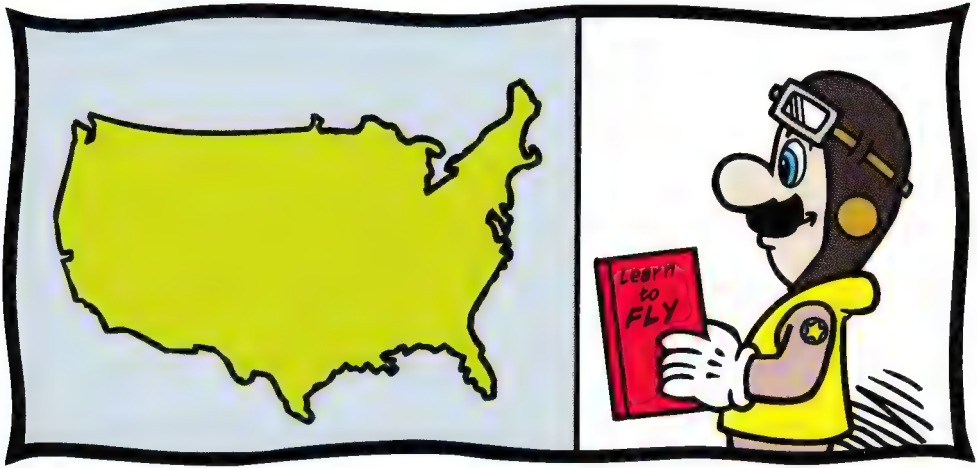


Illustration: Gary Fields

©1996 Nintendo

Colorado

The Rocky Mountain State in the western U.S. is known for its beautiful landscape —from grassy plains in eastern Colorado to the majestic Rockies in the western part of the state.

2 The United States Air Force Academy is in Colorado.

© Denver Metropolitan Convention & Visitors Bureau

Colorado's vast natural beauty makes it a popular destination for tourists.

Located at the foot of the Rocky Mountains, Denver, Colorado's capital, is called the "Mile High City." Today, Denver is a modern city, but it started life as a rough mining town full of folks in search of gold and silver. These days it's known for its computer and defense industries.

Wild Blue Yonder

The U.S. Air Force Academy, where students train to become Air Force officers, is in Colorado Springs. The city is also the headquarters of the U.S. Olympic Committee, and it's the home of the Pikes Peak Hillclimb, an annual car race that runs almost straight uphill.

Rocky Mountain Resorts

Colorado's ski resorts are world famous. There are dozens, but the two most popular are Aspen and Vail, known for great skiing and astounding beauty.

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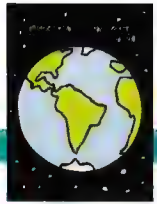
What is the difference between a lake and a pond?



GEOGRAPHY

1. A lake has salt water, a pond has fresh water.
2. Lakes are in the mountains, ponds in lowlands.
3. A pond is smaller and shallower than a lake.

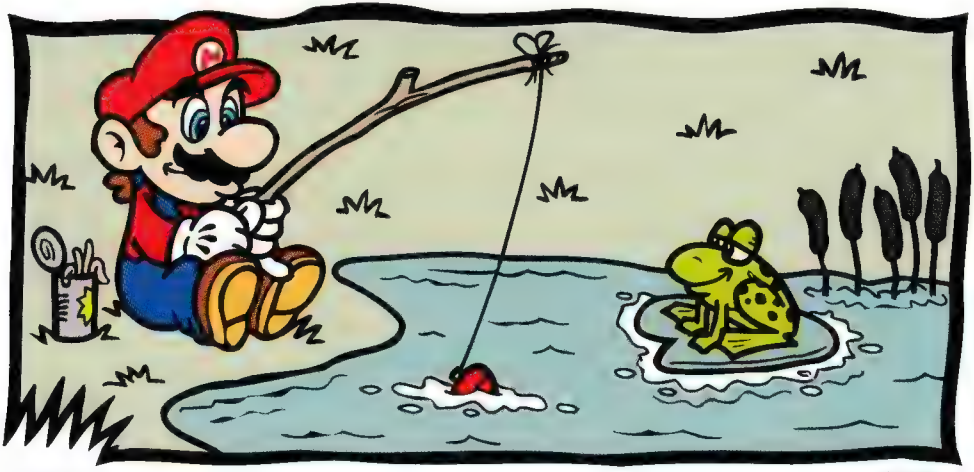


Illustration: Gary Fields

©1996 Nintendo

Lakes and Ponds

Ponds are generally smaller and shallower than lakes. Because ponds are shallow, there's little temperature variation between the surface and the bottom.

3 A pond is smaller and shallower than a lake.

© Mach 2 stock / Sunset

Lakes are like basins that catch and contain water. Some lakes in dry regions only exist during rainy seasons. They dry up during periods of warm, dry weather.

Some lakes, such as Lake Superior in Michigan, are so big they're almost like inland seas. They may have waves and tides, and they're big enough to support commercial fishing and huge container ships transporting iron, coal, and other goods.

Great Lakes

The Great Lakes region of Michigan includes Lake Superior, Lake Erie, Lake Ontario, Lake Huron, and Lake Michigan. Lake Superior is the largest lake in the U.S., and the largest freshwater lake in the world. All of the Great Lakes, except Lake Michigan, form borders between the U.S. and Canada.

Feeding Time

Most lakes and all ponds contain freshwater. The water that feeds lakes and ponds comes from different sources. Much of it comes from rain and snow. Some lakes are fed by rivers. For example, Lake Geneva, which borders Switzerland and France, is fed by the Rhone River.

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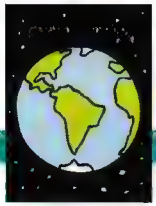
Where is Lake Geneva?



GEOGRAPHY

1. Between Germany and Austria
2. Between Norway and Sweden
3. Between Switzerland and France

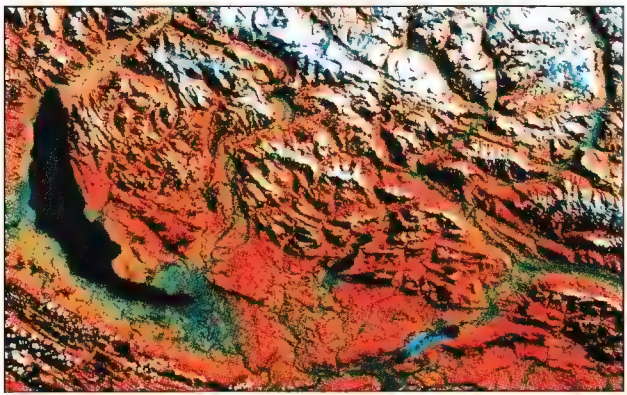
Illustration: Gary Fields

©1996 Nintendo

Lake Geneva

Geneva, Switzerland's second largest city, is located at the southern tip of Lake Geneva. About two-thirds of the lake is Swiss territory. The rest belongs to France.

3 Lake Geneva is between Switzerland and France.



© Len Sirman

Lake Geneva is the arc-shaped dark patch on this satellite photo.

Lake Geneva, the largest alpine lake on Earth, covers about 224 square miles (581 sq km). Its clear, blue water comes from the Rhone River. Periodically, Lake Geneva (or Lac Leman as it's known in France) is subject to a strange natural phenomenon called seiches. When this occurs, the water in the lake appears to rock from side to side, as if someone were swinging the lake back and forth. Seiches are caused by earthquake-like disturbances beneath Earth's surface.

Romantic Resorts

A number of famous resorts are located on the shores of Lake Geneva. Evian-les-Bains in France is known for its natural bubbling mineral springs. Montreux, Switzerland, is famous for its annual jazz festival. Lausanne, Switzerland, is the home of the International Olympic Committee.

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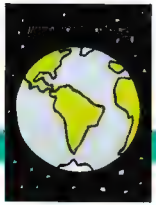
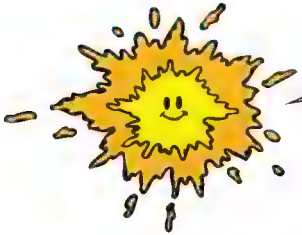
What is the capital of Morocco?



GEOGRAPHY



1. Casablanca
2. Rabat
3. Fez

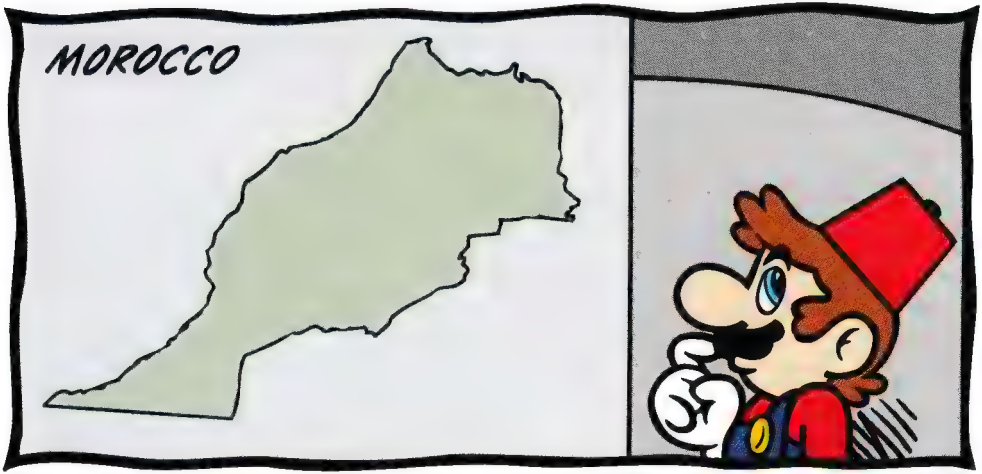


Illustration: Gary Fields

©1996 Nintendo

Morocco

This North African nation is just 8 miles (13 km) across the Strait of Gibraltar from Europe. For many years, Morocco was ruled by France and Spain.

2 Rabat is the capital of Morocco.

© Motte / Sunset

A kasbah is a fortified house or castle built for a noble. Some of the kasbahs in Morocco's cities have been standing for more than 500 years.

Today Morocco is an independent nation ruled by a king and governed by a prime minister and a legislature, some of whom are appointed by the king and some of whom are elected by the people.

Morocco is an Islamic country, but the native people are not Arabs. They're Berbers, who are descendants of ancient tribes from the Atlas Mountains in the center of the country. Arabic and French are Morocco's main languages.

Exotic Cities

Morocco's cities are known for their elaborate Moorish architecture and mysterious open-air markets called souks. Rabat, on the western coast, is Morocco's capital. Casablanca is Morocco's largest city. Other Moroccan cities include Fez, from which the flat-topped felt hats get their name, and Marrakesh, a favorite tourist center.

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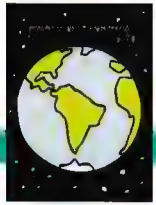
Where is Berlin?



GEOGRAPHY

1. Czech Republic
2. Germany
3. Hungary

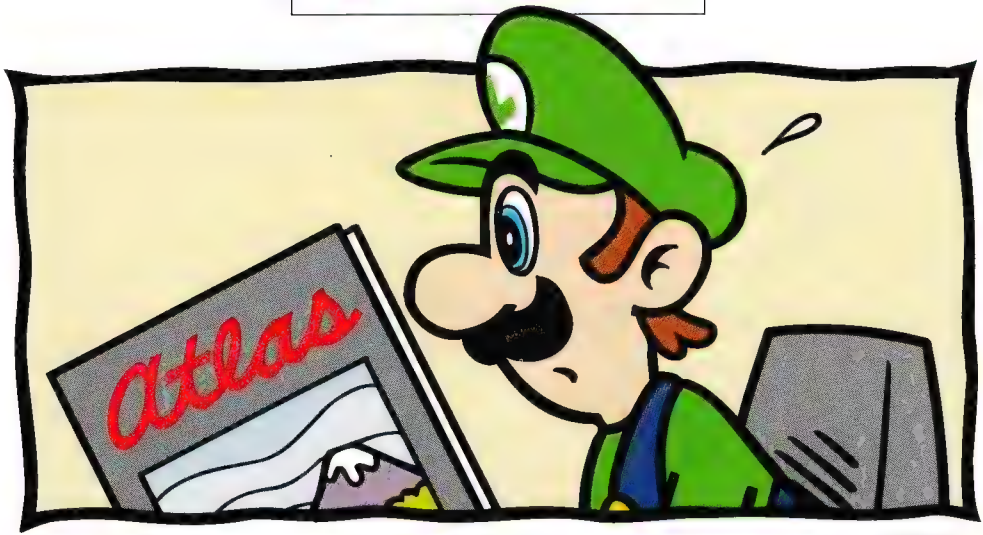


Illustration. Gary Fields

©1996 Nintendo

Berlin Wall

Between 1961 and 1989, the city of Berlin was divided by a wall that separated communist East Berlin from democratic West Berlin.

2 Berlin is the capital of Germany.

© P. Piel / Gamma

In 1989, the city of Berlin rejoiced as ordinary citizens officially tore down the Berlin Wall. The concrete barrier had separated the city for almost 30 years.

Germany's history of political separation and reunification is complex. These are the basics: At the end of World War II, Germany's Nazi government was dissolved. The Soviet Union, a communist nation, took control of East Germany. West Germany became a federal republic.

Divided City

This left Berlin, Germany's capital, entirely within East Germany. So, the city was divided as well. East Berlin was the communist capital of East Germany. West Berlin was democratic. To stop people from sneaking over the border from East to West Berlin, the East Germans erected a concrete barrier patrolled by armed soldiers. The Berlin Wall, built in 1961, became a sad symbol of hostility between democratic and communist nations. In 1989, the people of East Germany forced out their communist leaders and opened the city of Berlin once more.

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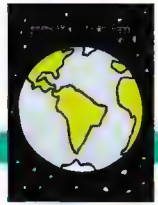
Which country produces the most movies each year?



GEOGRAPHY

1. France
2. India
3. United States

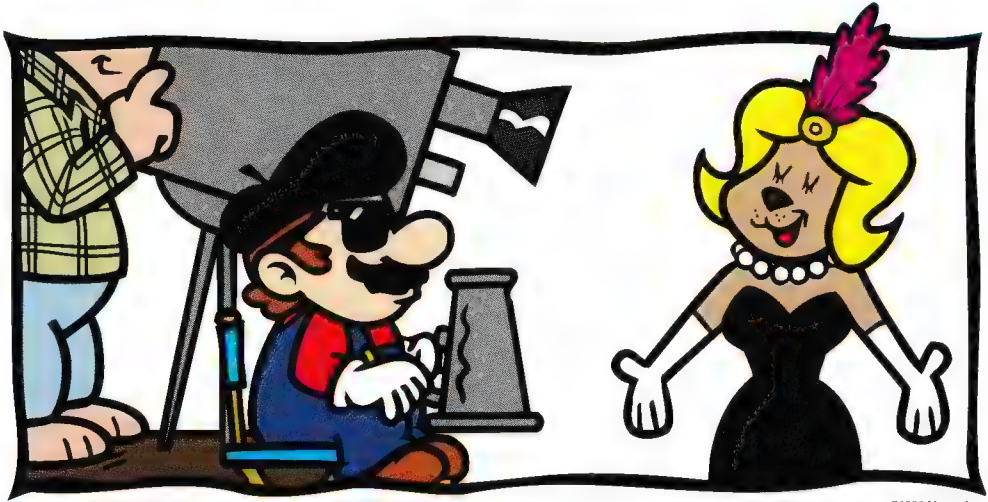


Illustration: Gary Fields

©1996 Nintendo

India

Indian film studios produce about 700 films a year. That's three times the number of movies produced in Hollywood each year.

2 India produces more movies each year than any other country.

© Foto Features / Sunset

India's population is about four times larger than the population of the U.S. It was estimated in 1995 that 5.7 billion movie tickets were sold in India. That's equivalent to every person in India going to the movies more than five times during the year.

Indian movies are a bit unusual to people who are used to Hollywood films. For one thing, almost every Indian movie is a musical. Even action movies and romances contain elaborate musical numbers, like the singing and dancing choruses in old-time Hollywood musicals. Interestingly, many of India's biggest movie stars aren't very good singers. They simply lip-synch the songs and the voices are filled in by professional singers later on. Songs from Indian movies often become hit singles as well. Much of the popular music played on the radio in India comes from films.

Translation

Because India is a land of many languages (there are 16 official languages and countless dialects), movies that are regional hits are then translated into other Indian languages so they can be enjoyed in other parts of the country.

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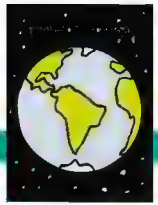
On which continent is Greece located?



GEOGRAPHY

1. Africa
2. Asia
3. Europe

Illustration: Gary Fields

©1996 Nintendo

Greece

Located in southern Europe, much of Greece is a peninsula —land surrounded by water on three sides. The country also encompasses more than 1,000 islands.

3 Greece is in Europe.

© Greek National Tourist Office

A favorite place for tourists to visit is the Parthenon in Athens, Greece. Time, weather, war and vandalism have damaged the once magnificent structure that was built from 447 to 432 B.C.

People visit Greece to experience its history and culture. Ancient Greece was considered the birthplace of western civilization. In Athens, the capital, and cities such as Delphi and Thebes are the ruins of buildings where Aristotle, Sophocles, and Alexander the Great once stood.

The most famous is the Parthenon in Athens. This temple to the goddess Athena was built in the 5th century BC. It's mostly in ruins, but that's understandable. It's been standing for over 2,000 years!

Fun in the Sun

Greece is a great place to soak up the sun. Islands such as Mykonos and Corfu are famous for sandy beaches and blue water.

With over 2,500 miles (4,000 km) of coastline, Greece supports a large fishing industry. Among its agricultural products are grapes and olive oil, which are also important ingredients in Greek cooking.

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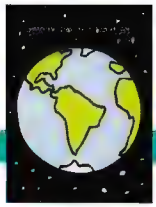
What do people in Burkina Faso do with fo?



GEOGRAPHY

1. Eat it
2. Drink it
3. Wear it

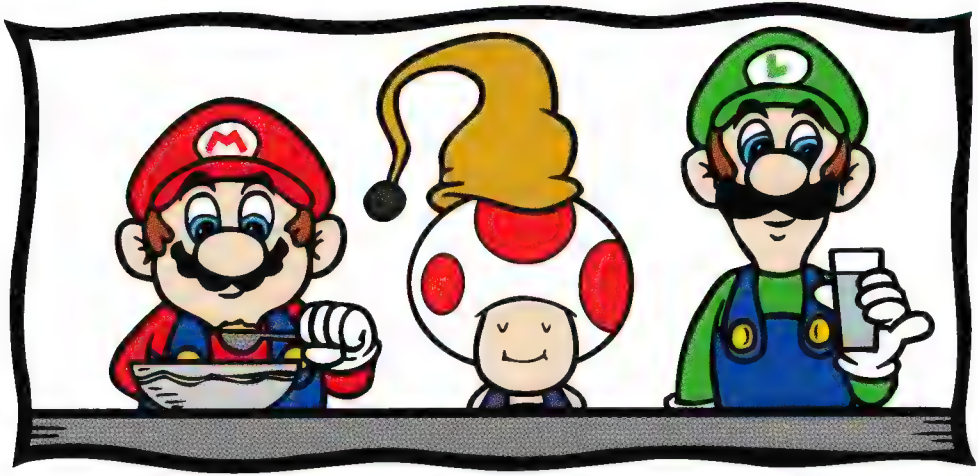


Illustration: Gary Fields

©1997 Nintendo

Burkina Faso

Fo, a beef stew, is Burkina Faso's national dish. It's made with beef, onions, tomatoes, and okra, and is usually served with rice. Like many African foods, fo is eaten with the hands.

1 Fo is a type of beef stew from the country of Burkina Faso.

© Superstock

This old mosque of sun-dried earth and wood is located near Ouagadougou, the capital of Burkina Faso, where the average March temperature is 106°F (41°C).

Burkina Faso, in West Africa, was formerly called Upper Volta. Its capital is Ouagadougou.

People of Burkina Faso are called Burkinabe. Many are farmers, but the country's poor soil and dry climate make farming hard. Sorghum, millet, and peanuts are main crops because they're resistant to drought. Much of Burkina Faso's food is imported from other countries.

Cash Crop

Recently, Burkina Faso has become known for an unusual cash crop: shea nuts. Nuts from the shea tree are dried and then pounded between two stones. The mashed nuts are then kneaded by hand to make smooth white shea butter, which is used as a skin moisturizer. Cosmetics companies from all over the world now go to tiny Burkina Faso for this unusual ingredient. The shea tree has created a new industry in Burkina Faso.

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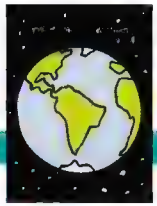
Which is known as the Green Mountain State?



GEOGRAPHY

1. Montana
2. Nevada
3. Vermont

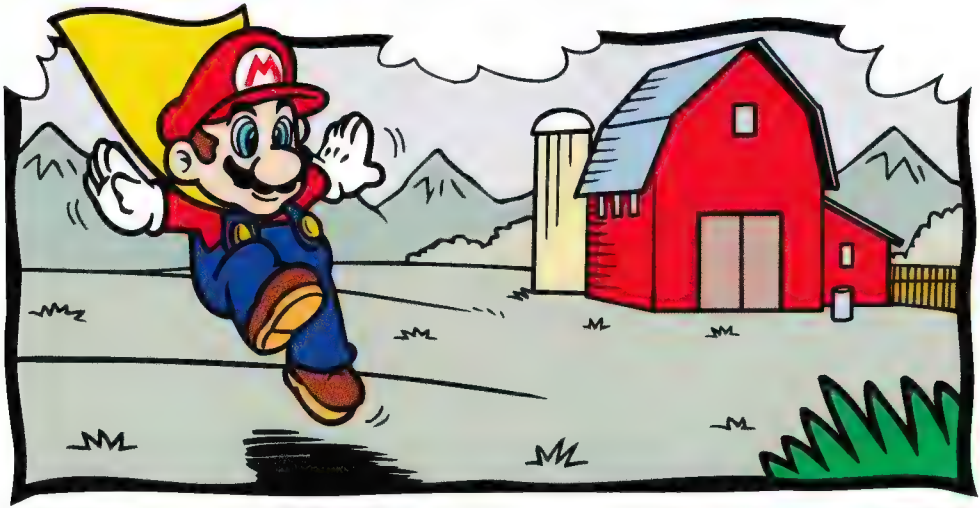


Illustration: Gary Fields

©1997 Nintendo

Vermont

The name Vermont comes from the French words *monts verts*, meaning "green mountains." The Green Mountains extend through the state, north to south.

3 Vermont is the Green Mountain State.

© Vermont Department of Travel and Tourism

Farming continues to enrich Vermont's economy and beauty, with cows' milk serving as its chief agricultural product.

Vermont is bordered by New Hampshire to the east, New York to the west, Massachusetts to the south, and Canada to the north. It's one of our more rural states, known for maple sugar production and dairy farming. In fact, some people like to say there are more cows than people living in Vermont!

Green Mountain Boys

Vermont became our 14th state in 1791—the first state outside the original 13 colonies. Yet early in its history, Vermont's territory was divided between New York and New Hampshire.

Vermonters really wanted to govern themselves. So, a Vermonter named Ethan Allen organized a militia to force New Yorkers out of Vermont. The group became known as the Green Mountain Boys. Later, Ethan Allen and the Green Mountain Boys defeated the British at Fort Ticonderoga during the Revolutionary War.

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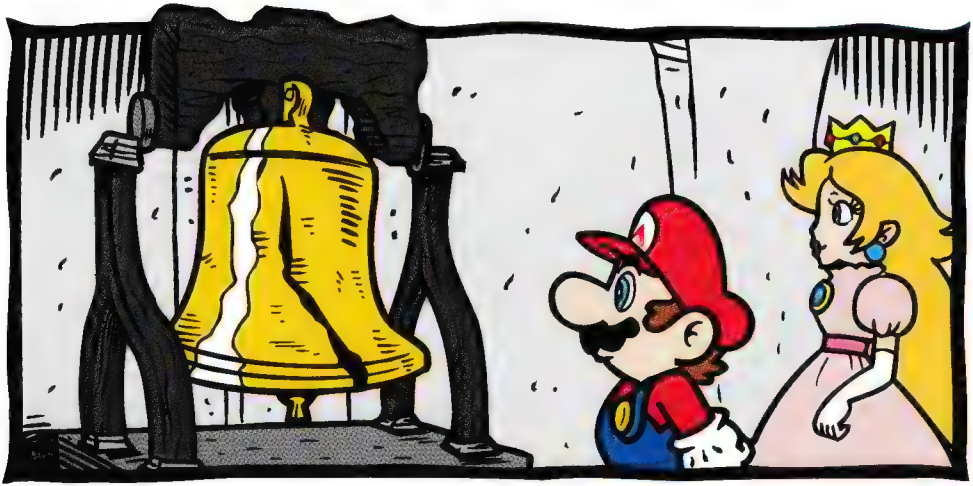
Which US city is known as the "City of Brotherly Love"?

GEOGRAPHY

1. Boston
2. Des Moines
3. Philadelphia



Illustration, Gary Fields

©1997 Nintendo

Philadelphia

The prefix "phil" comes from the Greek word *philos,* which means loving. Philadelphia is the largest city in the state of Pennsylvania and one of the ten largest cities in the United States.

3 Philadelphia, Pennsylvania, is known as the "City of Brotherly Love."

© National Park Service

Each year, more than three million people visit Independence Hall to see the room where the Continental Congress met and the Liberty Bell, which hangs in a nearby pavillion.

Philadelphia is home to many historic landmarks, such as the Liberty Bell and Independence Hall, where the Declaration of Independence was signed. Thomas Jefferson wrote the historic document in Graff House nearby. The U.S. Supreme Court heard its first case at Old City Hall. Congress first met at Congress Hall. Betsy Ross sewed the first U.S. flag at her house downtown.

Fun in Philly

The Franklin Institute museum honors Benjamin Franklin—patriot, inventor, and Philadelphia native. It's filled with interactive exhibits, including a model of a human heart that's big enough to walk through.

Philadelphia is also known for fun foods like thick, gooey cheese steaks and soft, hot pretzels with mustard. And every New Year's Day, the city comes alive in a wild, colorful musical celebration called the Mummers Parade.

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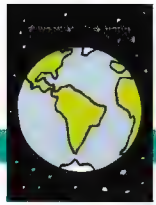
What city is famous for the "running of the bulls"?



GEOGRAPHY

1. Chicago, Illinois
2. Pamplona, Spain
3. Quito, Ecuador

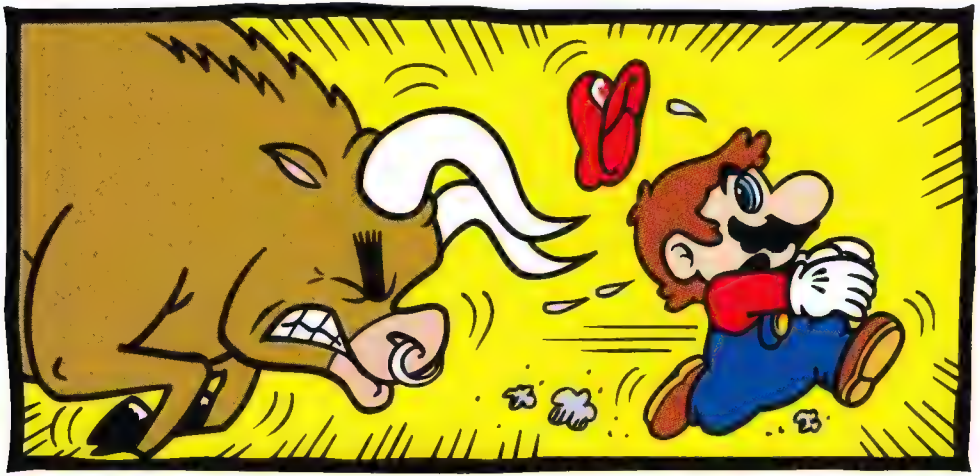


Illustration Gary Fields

©1997 Nintendo

Pamplona

Each July, the city of Pamplona in northwest Spain celebrates the feast of St. Fermin with a wild and dangerous event known as the running of the bulls.

2 Pamplona, Spain, is famous for its annual "running of the bulls."

© Tourist Office of Spain

The annual running of the bulls takes place in Pamplona, the capital city of Navarre Province in northern Spain.

Every morning for a week, bulls are released from a corral to run through the city streets to a bull ring at the center of town. As if this weren't wild enough, men go out into the streets and run ahead of them! The run takes only about three minutes, but the pressure is intense as brave (or crazy) men, try to outrun the bulls through the narrow streets of the city. The origin of the celebration isn't clear, but it's been going on for 600 years. In the afternoons, the bulls are used in bullfights. American writer Ernest Hemingway visited Pamplona in the 1920s and wrote about the running of the bulls in his novel, *The Sun Also Rises.*

Pompey's Pride

The city of Pamplona dates back to Roman times. It was founded by Roman general Pompey, who named it Pompeiopolis—after himself. Over time, the name evolved into the Spanish Pamplona.

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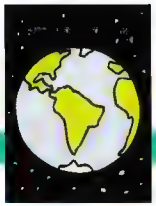
Where did an earthquake interrupt a 1989 World Series baseball game?



GEOGRAPHY

1. Atlanta
2. Cleveland
3. San Francisco

Illustration Gary Fields

©1997 Nintendo

San Francisco

When the San Francisco Giants baseball team made it to the World Series, the city was rockin'—literally!

3 An earthquake interrupted a 1989 World Series baseball game in San Francisco.

© Saudade / Jernican

The earthquake that hit San Francisco in October 1989 caused billions of dollars worth of damage to this beautiful, historic city.

The city of San Francisco is one of America's most beautiful, cultural, and historic cities. It's famous for many things. Unfortunately, one of them is earthquakes.

City by the Bay

The city's most famous site is the Golden Gate Bridge, a 1.2 mile (2 km) span over San Francisco Bay. It's a suspension bridge, which means that it sways in the wind. Most people drive across it, but pedestrians may walk across the bridge and enjoy the view.

Uphill and Down

San Francisco is built on more than 40 hills. Locals strengthen their leg muscles by walking around town and drivers give their car brakes a workout, especially on Lombard Street—the crookedest street in the world. With a downhill slope and series of hairy hairpin turns, it's steep enough to be a skiing slalom course!

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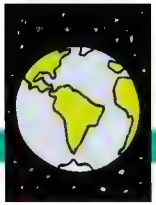
What was the original name of New York City?



GEOGRAPHY

1. New Amsterdam
2. New Paris
3. Old York City

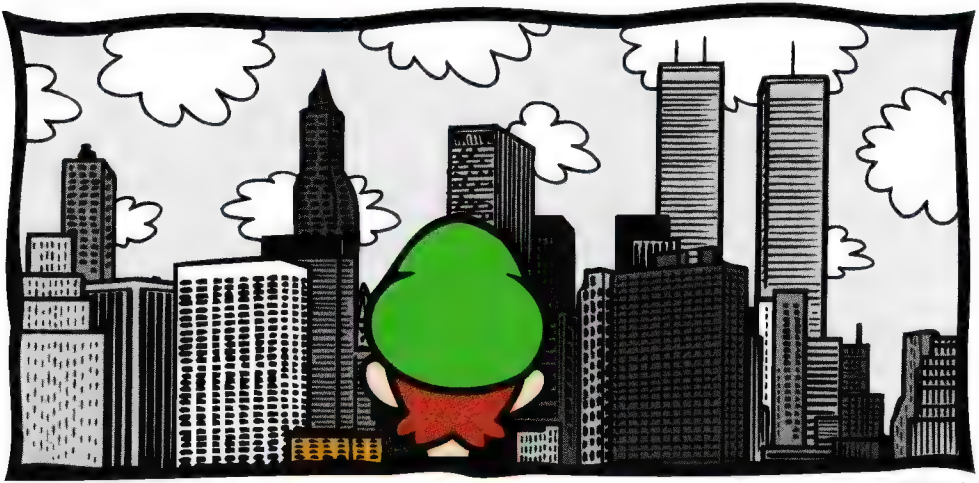


Illustration Gary Fields

©1997 Nintendo

New York City

The area that is now New York City was once a Dutch colony. At that time, it was named New Amsterdam, after Amsterdam, the capital of Holland.

1 New York City was once called New Amsterdam.

© G. Boutin, Explorer

The borough of Manhattan is part of New York City. It's some of the world's most valuable real estate, but it was purchased for just 24 dollars.

One of New York's early settlers was Henry Hudson, an English explorer. The Hudson River, which runs from New York City north through much of New York state, was named for him. Hudson's expedition to the New World was paid for by the Dutch East India Company. In 1626, the company set up a settlement, called New Amsterdam, at the southern tip of Manhattan Island.

Real Estate Deal

The Wappinger tribe already lived on Manhattan Island. The Dutch sent a man named Peter Minuit to purchase the island from them. In exchange for the island, Minuit traded money and trinkets to the Indians. Historians estimate that Minuit's offering was worth about 24 dollars. The land he bought—now the borough of Manhattan in New York City—is among the world's most valuable real estate.

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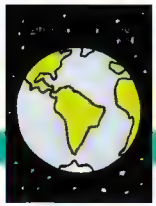
Which is the largest continent?



GEOGRAPHY

1 Africa
2 Asia
3 Australia

Illustration: Gary Fields

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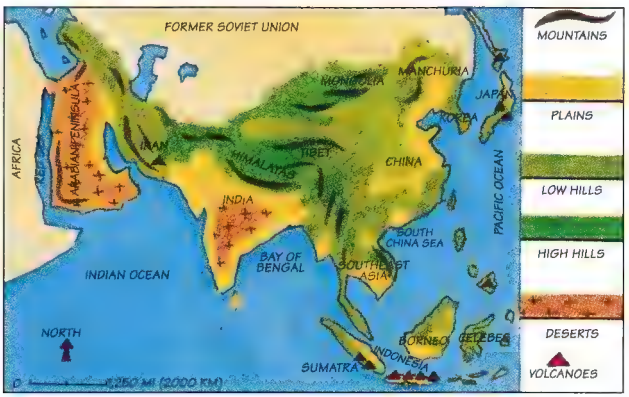
Asia

More than 60 percent of the world's people live in Asia. It covers about one-third of Earth's land surface.

2 Asia is the largest continent.



Asia is a continent of contrasts. It ranges from high mountains such as the Himalayas to desert lowlands in the Middle East. (Headings on this map indicate general locations.)

Though Asia and Europe are connected, an imaginary border separates the two continents. The line is drawn along the Ural Mountains of Russia and through the Caspian and Black Seas. It divides several countries including Russia and Turkey.

Continent of Contrasts

On its huge land mass—bigger than North America, Europe, and Australia combined—Asia has extreme variations in climate. Siberia, part of Asian Russia, has long, cold winters. Southwest Asian nations, like Saudi Arabia, are hot and dry. Southeast Asia, including Indonesia and the Philippines, is hot and humid.

Asia also has economic contrasts. It includes some of the world's poorest countries, such as Bangladesh and Myanmar, as well as wealthy nations, such as Japan and the oil-producing nations of the Persian Gulf.

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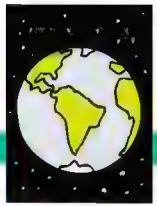
Which is the Cornhusker State?



GEOGRAPHY

1. Iowa
2. Nebraska
3. Oklahoma

Illustration: Gary Fields

©1997 Nintendo

Nebraska

Located in the heartland of America, Nebraska is one of our major agricultural states. Can you guess its main crop?

2 Nebraska is the Cornhusker State.

© Nebraska Department of Economic Development

The Missouri River forms Nebraska's eastern border. Its natural beauty is lined by wooded bluffs, cornfields, and some of the region's oldest settlements.

The name Nebraska comes from the Oto Indian word *nebrathka,* meaning flat water. The Oto were referring to the Platte River, the longest in the state.

The Oto were one Plains Indian tribe that called Nebraska home long before European settlers moved west. The Sioux, Cheyenne, Pawnee, and Arapaho were among the others.

Expanding Nation

Nebraska was part of the huge parcel of land that Thomas Jefferson acquired from the French in the Louisiana Purchase of 1803. Because early surveyors reported that Nebraska was too dry to be of much interest, settlers tended to pass through on their way west. Meanwhile, custody of the area of present-day Nebraska was passed around from Indiana to Louisiana to Missouri. It finally achieved statehood of its own in 1867. Nebraska's capital city is Lincoln.

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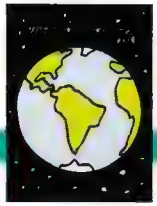
What is the key on a map?



GEOGRAPHY

1. An explanation of symbols
2. The line that indicates the equator
3. A segment that details city streets

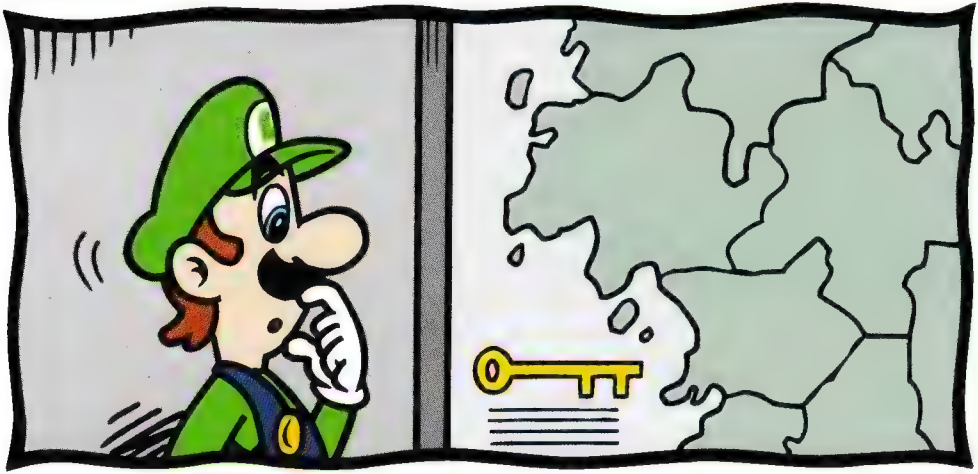


Illustration: Gary Fields

©1997 Nintendo

Maps

Reading a map is like deciphering a code. You can use the map's key to help you understand the map's coded symbols.

1 A map's key is an explanation of symbols.

© Ch. Errath / Jernican

Names of cities, towns, and counties are written in different sizes and colors of type. The key explains why a place name is written in a certain style—usually names of larger cities are written in larger type.

On the map in the photograph, roads are indicated by several colors—red, blue, yellow, and gray. Each color has a different meaning. For example, red roads might be highways without tolls and the blue might be highways with tolls. This can make a difference to a driver who's traveling a long distance and wants to avoid paying tolls. To find out what the different colors mean, the driver would refer to the map's key for an explanation.

Space Saver

Points of interest are usually indicated by symbols on the map. A tiny tree might indicate a park; an airplane indicates an airport. It would be impossible to write out every bit of information on the face of the map; there wouldn't be enough room. So, instead, mapmakers use these symbols, which they explain in the map's key.

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Which are the boundaries between Earth's tropics and temperate zones?

GEOGRAPHY

1. Equator and International Date Line
2. Northern Hemisphere and Southern Hemisphere
3. Tropic of Cancer and Tropic of Capricorn

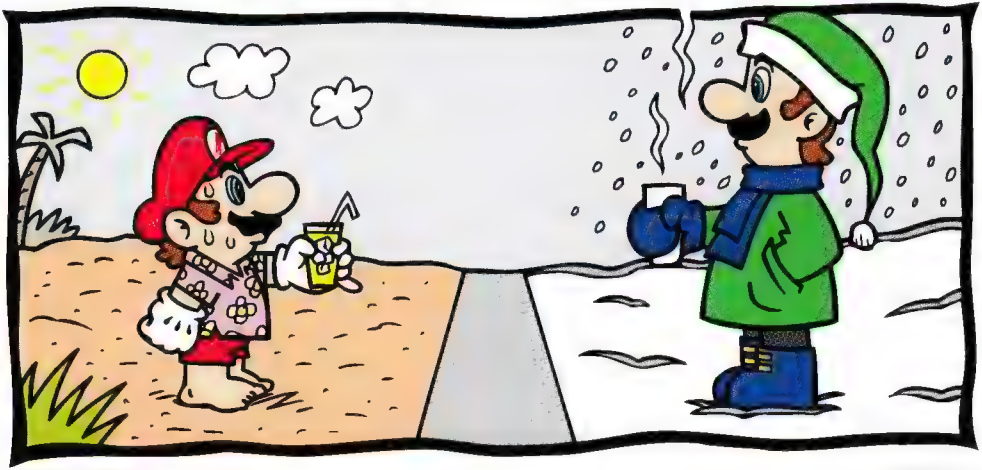


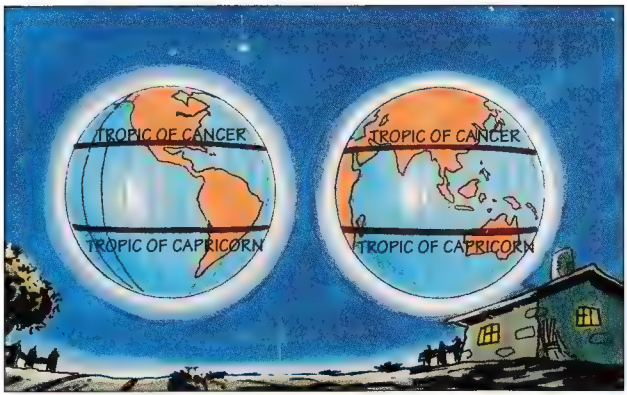
Illustration: Gary Fields

©1997 Nintendo

Tropics

The Tropic of Cancer is an imaginary line circling Earth above the equator. The Tropic of Capricorn circles Earth below the equator.

3 The Tropic of Cancer and Tropic of Capricorn separate the tropics from the temperate zones.



© J. Dang

The Tropic of Cancer runs around Earth above the equator and the Tropic of Capricorn runs around Earth below the equator.

The equator is the imaginary line running around Earth's center. Regions directly on the equator have, on average, the highest daily temperatures on Earth. As you travel away from the equator, average temperatures drop, until you reach the Poles—the coldest places on Earth.

The Topic is the Tropics

The warm region of Earth known as the tropics extends north from the equator to the imaginary line called the Tropic of Cancer, and south to the imaginary line called the Tropic of Capricorn. The tropics have consistently warm weather and little temperature variation from season to season.

Beyond the tropics are regions known as temperate zones. These areas have seasonal temperature variations—hot summers and cold winters.

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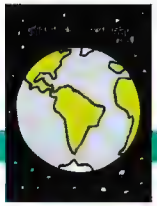
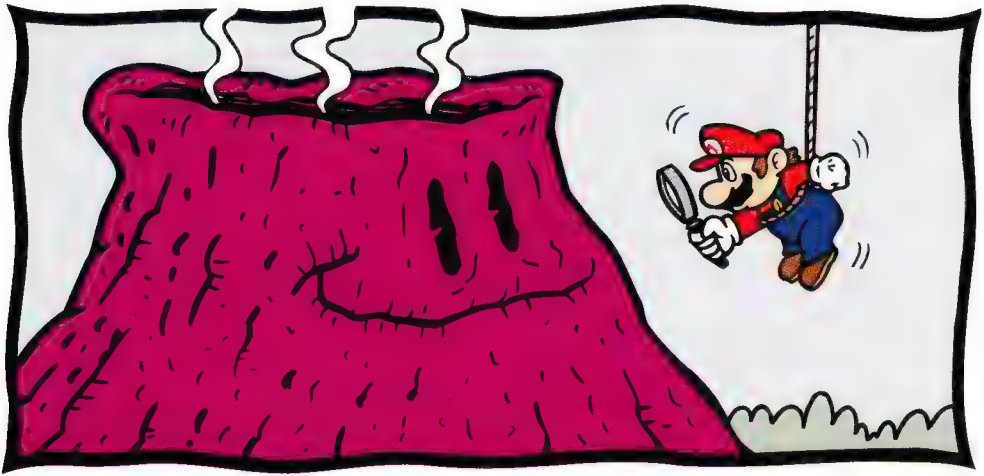
What do volcanologists study?



GEOGRAPHY

1. Ancient cultures
2. Earthquakes
3. Volcanoes



Illustration, Gary Fields

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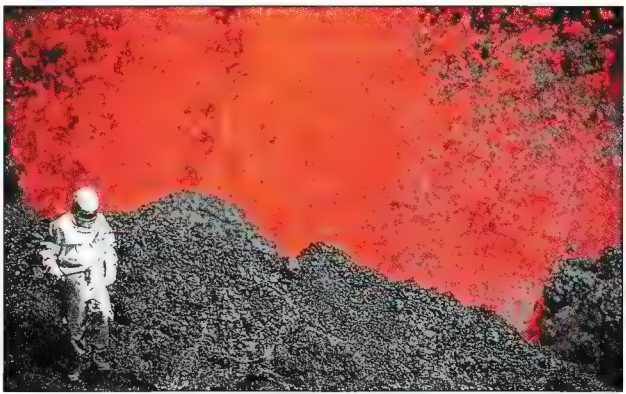
Volcanology

Volcanologists study the behavior of volcanoes so that they can learn to predict when and where eruptions might occur.

3 Volcanologists study volcanoes.



© K. Kraft / Explorer

Volcanologists work on the very edge of volcanoes! After the 1982 eruption of Mount St. Helens in Washington state, the David A. Johnston Cascades Volcano Observatory was established to monitor that volcano's activity.

One of the earliest volcanology laboratories was the Hawaiian Volcano Observatory, opened in 1912. Scientists at the observatory set out to find systematic, or organized, ways to track the behavior of volcanoes. Much of the work they pioneered more than 80 years ago is still used today.

Constant Observation

The Hawaiian Volcano Observatory is located right on the rim of Kilauea volcano. Every minute of the day, it monitors the chemical and seismic, or Earth tremor, activity in and around the volcano. Any changes in the volcano's activity could signal a coming eruption. By comparing data collected in Hawaii with data collected at other volcano observatories, volcanologists can draw conclusions about the sorts of seismic signals which indicate that an eruption will occur.

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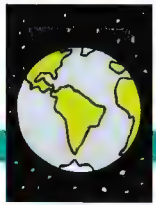
Which island is famous for its wild ponies?



GEOGRAPHY

1. Assateague Island
2. Long Island
3. Rhode Island

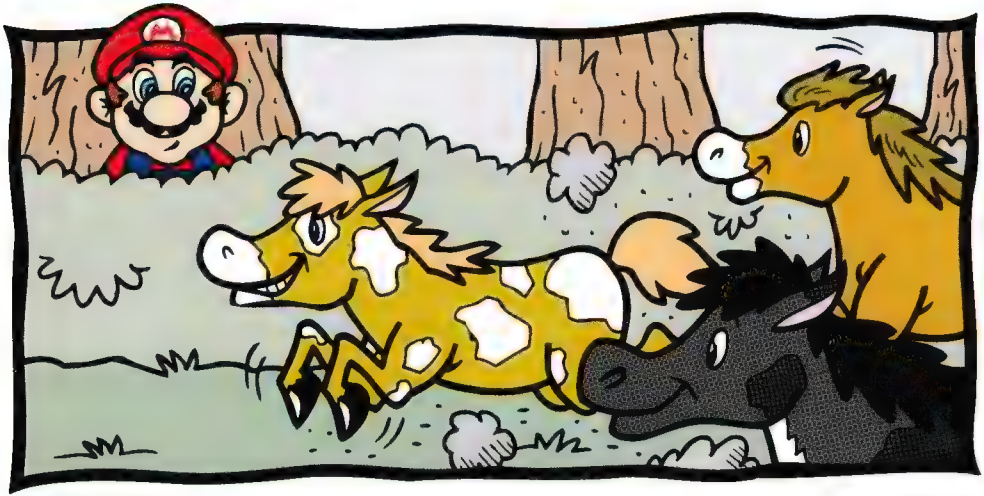


Illustration: Gary Fields

©1997 Nintendo

Assateague Island

On Assateague Island, off the eastern shore of Maryland and Virginia, wild ponies roam free. Since the National Parks Service oversees much of the island, the ponies' habitat is protected.

1 Assateague Island is famous for its wild ponies.

© Assateague Island National Seashore

Assateague Island, home of the famous Chincoteague ponies, is also a sanctuary for migratory waterfowl.

There are many stories about how the ponies arrived on Assateague Island. Most people believe they were the survivors of a shipwreck in the 1600s. Some of the horses that had been carried on the ship managed to swim to shore. They've lived on the island ever since.

Two States, Two Herds

The northern portion of Assateague Island is in Maryland and the southern portion in Virginia. The National Park Service oversees the Maryland portion of the island. One herd of ponies lives here. A second herd lives on the Virginia end of the island. They are owned by the Chincoteague Volunteer Fire Department on neighboring Chincoteague Island. Each year, some of these ponies are rounded up and herded across the channel between the two islands, then they're sold at auction in Chincoteague.

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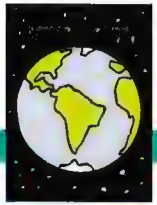
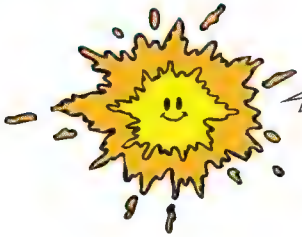
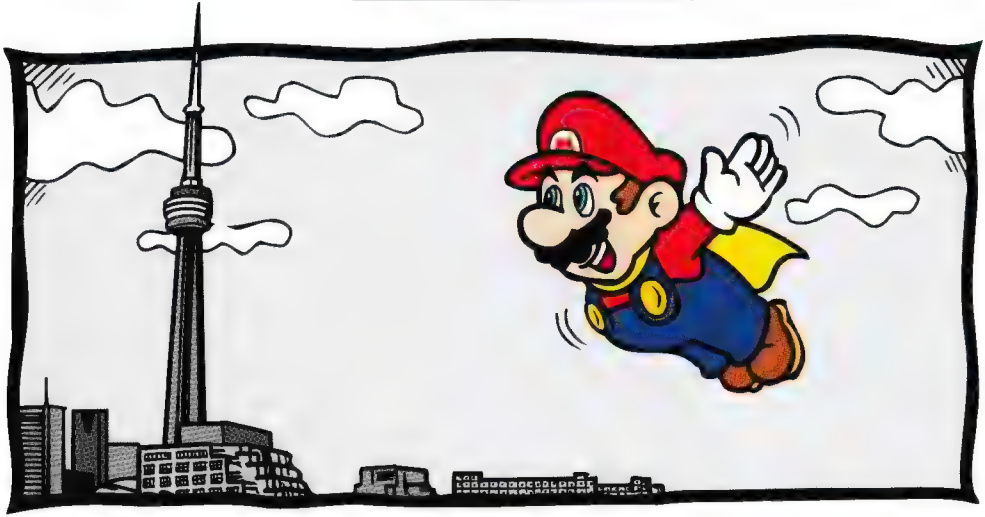
Which is Canada's largest city?



GEOGRAPHY



1. Montreal
2. Toronto
3. Vancouver



Illustration, Gary Fields

©1992 Nintendo

Toronto

The world's tallest free-standing structure is Toronto's CN Tower, an 1,815-foot (553 m) concrete tower for radio and TV transmitters.

2 Toronto is Canada's largest city.

© Superstock

The Skydome and CN Tower are prominent features of this nighttime Toronto cityscape.

Toronto is the capital city of the Canadian province of Ontario. Ever since it was settled in the 1600s, it has been a busy trading center. It's still one of Canada's major business cities. The name Toronto is a Huron Indian word meaning "meeting place." Toronto's location made it a natural spot for trading. On the shore of Lake Ontario and bordered by the Humber and Don rivers, Toronto was easy to get to.

Yonge Street, Toronto's 200-year-old main road, is the longest street in the world. It stretches 1,190 miles (1,900 km)—all the way to Minnesota.

Sports Center

Toronto is filled with exciting restaurants, theaters and attractions. Sports fans go to visit the Hockey Hall of Fame and the SkyDome, where baseball's Toronto Blue Jays and the Canadian Football League's Toronto Argonauts play. The modern stadium has a fully retractable roof.

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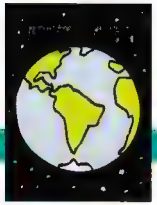
D3 054 81-10

What does a hydrographer do?



GEOGRAPHY

1. Charts and describes bodies of water
2. Designs water-powered machines
3. Searches for underground water sources

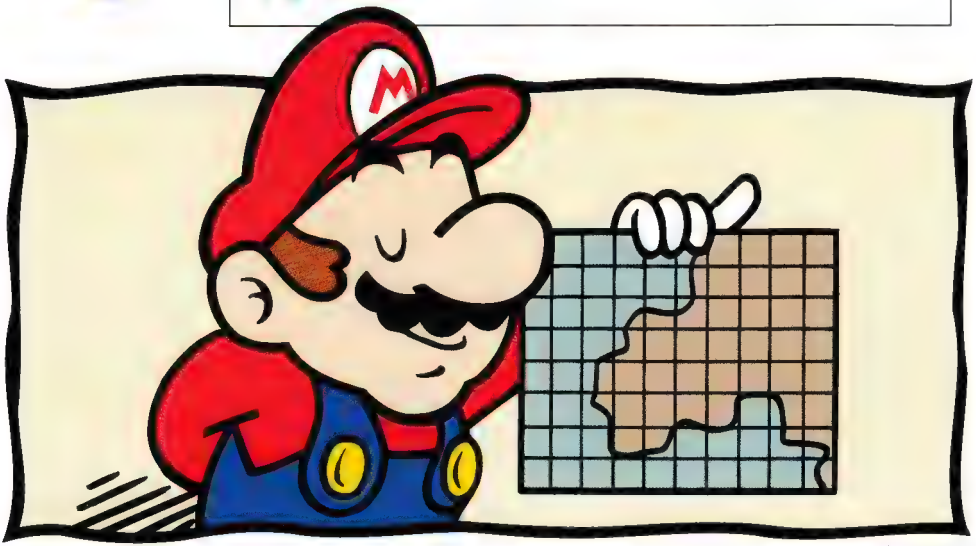


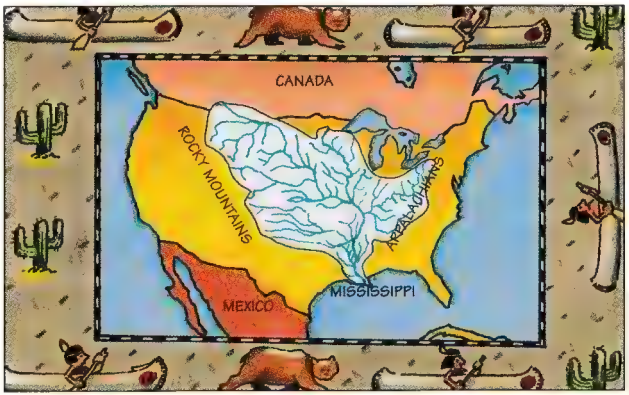
Illustration: Gary Fields

©1997 Nintendo

Hydrography

For sailors and sea captains to navigate, they need maps of the oceans on which they travel. Hydrographers create those maps.

1 A hydrographer charts and describes bodies of water.



© J. Dang

This map is a sketch of the course of the Mississippi River and its tributaries. A hydrographer would prepare a far more detailed and complete map.

Today, hydrography is part of the field of oceanography, the study of the oceans. Hydrographers specialize in charting coastal waters, especially large bodies of water like oceans and seas. They may also chart inland waters such as lakes and rivers, particularly if those bodies of water are used as commercial shipping routes. A hydrographer's work is extremely important to businesses that transport goods by sea.

Just the Facts

Hydrographers chart the physical characteristics of a coastline, but that's just the beginning. They research and document all the facts about a body of water, including the water depth at various points; the underwater hazards such as submerged rocks, reefs, or debris; and even the buoys and other landmarks and navigational aids throughout the area.

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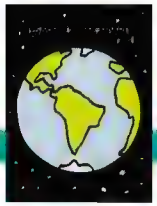
Where is the highest waterfall on Earth?



GEOGRAPHY

1. Australia
2. Canada
3. Venezuela

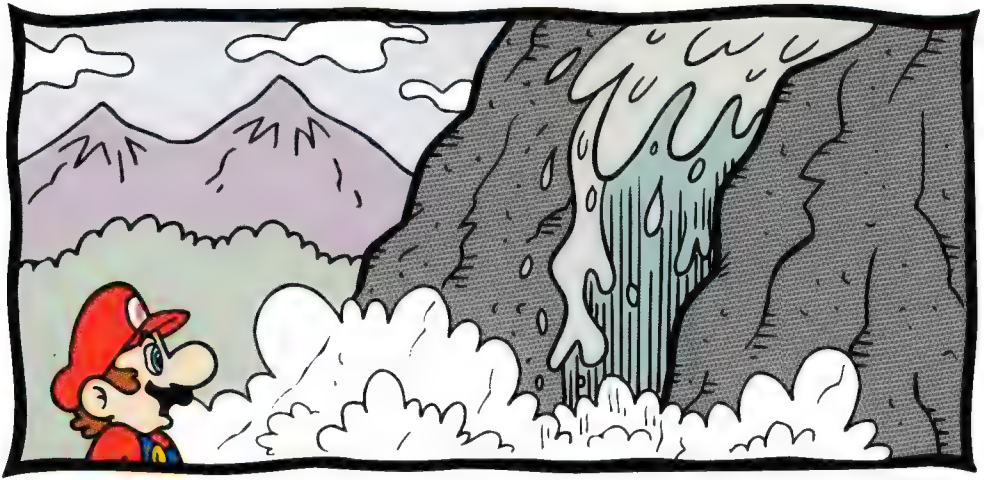


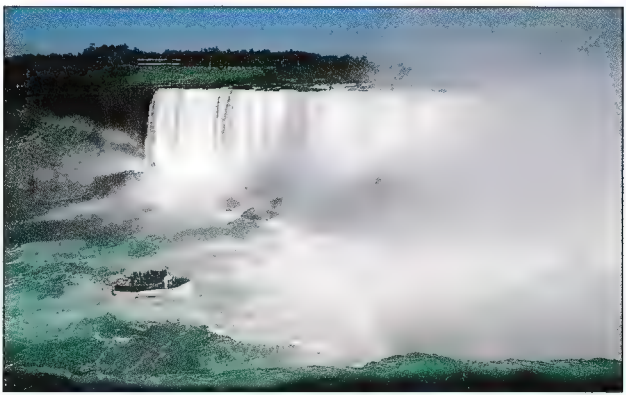
Illustration: Gary Fields

©1997 Nintendo

Waterfalls

Angel Falls in Venezuela is fed by the Churun River. Its greatest uninterrupted drop is 2,640 feet (800 m), and its highest point is 3,212 feet (979 m).

3 The highest waterfall on Earth is in Venezuela.



© K. Stratton / Explorer

The plunge pool, which forms in front of the falls where the water drops, is generally quite deep. The force of the falls keeps the water below constantly churning.

Rivers begin in mountains and flow downhill over rocks and sand. Over time, the constant flow of the water erodes the soft rock and sand below it. However, hard rock remains. Eventually, the action of the water wears deeply into the soft rock, creating a ledge or sill of hard rock above it. The water continues to flow over the hard rock and eats away at the soft rock. The distance between the hard rock ledge and soft rock below it becomes greater and greater. This creates a waterfall.

Powerful Falls

As the water tumbles over the edge of the falls it gains speed and momentum. In some cases, the falls are so heavy and powerful, they're used to run hydroelectric power plants. Such power stations have been built at Niagara Falls, on the U.S.-Canadian border. They supply electricity to nearby cities.

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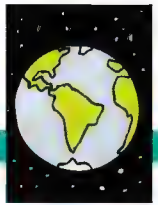
Where are the islands known as the West Indies?



GEOGRAPHY

1. Arabian Sea
2. Caribbean Sea
3. Indian Ocean

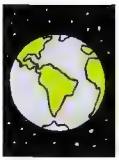
Illustration Gary Fields

©1997 Nintendo

West Indies

The island group known as the West Indies separates the Caribbean Sea from the Atlantic Ocean. It extends from the tip of Florida's peninsula to Venezuela.

2 The West Indies are in the Caribbean Sea.



© Timmermann / Sunset

Islands of the West Indies, such as Jamaica, Barbados, and Cuba, are known for their tropical fruits such as mangoes, papayas, and bananas. In the 16th and 17th centuries, European traders went to the islands for sugar, coffee, and nutmeg.

Christopher Columbus stumbled upon the West Indies on his voyage to the New World in 1492. He established a settlement on the island of Hispaniola, which today is split into the nations of Haiti and the Dominican Republic.

At the time, the islands were populated by Arawak and Carib Indians. Thanks to Columbus and the Spanish explorers that followed him, the native people were enslaved and largely wiped out.

Island Outposts

Following Spain's lead, other European nations colonized the West Indies. The Netherlands, France and England had island colonies. Haiti was the first island to reclaim independence in 1804. Others followed over the years, most recently St. Kitts and Nevis in the 1980s. Some are still colonies of European nations.

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Which U.S. city is famous for a 1955 bus boycott?

GEOGRAPHY

1. Dallas, Texas
2. Montgomery, Alabama
3. Phoenix, Arizona

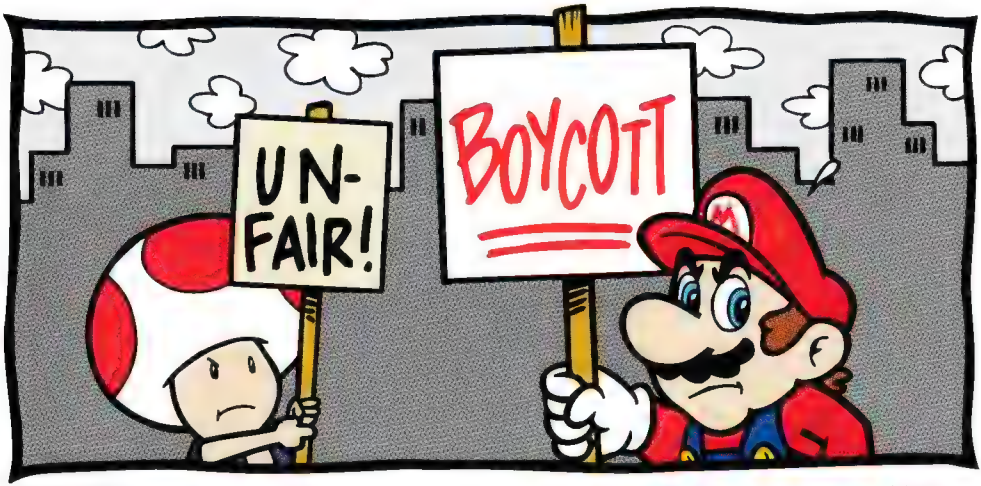

Illustration: Gary Fields

©1997 Nintendo

Alabama

The Montgomery bus boycott was among the first formal protests in the civil rights movement. Today, the Civil Rights Memorial commemorates this and other events in the fight for racial equality.

2 Montgomery, Alabama, was the scene of a bus boycott in 1955.

© Alabama Bureau of Tourism & Travel

Alabama's historic state capitol, The State House in Montgomery, was constructed in 1851.

Montgomery is Alabama's state capital. It was also the first capital of the Confederacy, when the southern states seceded from the Union prior to the Civil War. The Confederate White House, where Jefferson Davis was sworn in as president of the Confederate states is in Montgomery.

Ironically, the Dexter Avenue King Memorial Baptist Church, where civil rights leader Dr. Martin Luther King, Jr., preached his message of racial equality is also in Montgomery.

Dixie Living

Alabama is our 22nd state. It joined the nation in 1819. Birmingham is its largest city. Huntsville, also known as "Rocket City," is home to the Space and Rocket Center, a museum of rockets and space craft, as well as U.S. Space Camp, where kids can try out flight simulators and other equipment used by astronauts.

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Where is the southernmost point in the continental United States?

GEOGRAPHY

1. Brownsville, Texas
2. Key West, Florida
3. San Diego, California

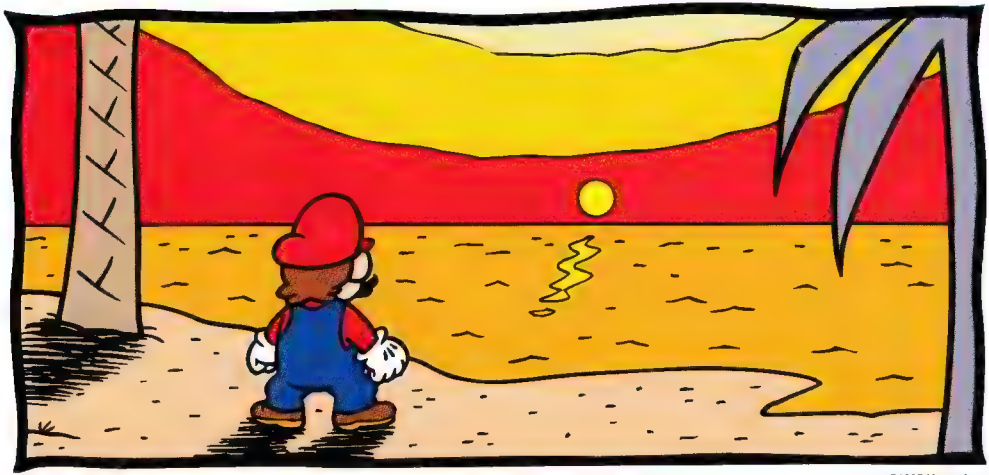

Illustration: Gary Fields

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Florida Keys

The string of islands off the south coast of Florida are called the Keys, from the Spanish word *cayo*, which means "rocks" or "islets."

2 Key West, Florida, is the southernmost point in the continental United States.

© Florida Keys TDC

Author Ernest Hemingway's home is a favorite stop for tourists in Florida's Key West.

There are about 60 keys. The largest, Key Largo, is about 30 miles long (48 km) and 2 miles wide (3 km). They're linked to the city of Miami by the Overseas Highway, which stretches over 43 bridges.

Pirates' Paradise

From the time they were discovered by Spanish explorer Ponce de Leon in the 1500s, the keys were dangerous territory for trading ships. Their many inlets and rocky coves provided plenty of hideouts for pirates who robbed the ships.

Artists' Haven

Key West is the southernmost of the keys—just 90 miles from Cuba. The island has long been a favorite getaway for writers, artists and other famous people. President Harry Truman had a home in Key West. Author Ernest Hemingway's Key West house is now a museum, filled with his personal belongings and hundreds of cats—all descendants of Hemingway's own pets.

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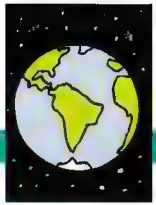
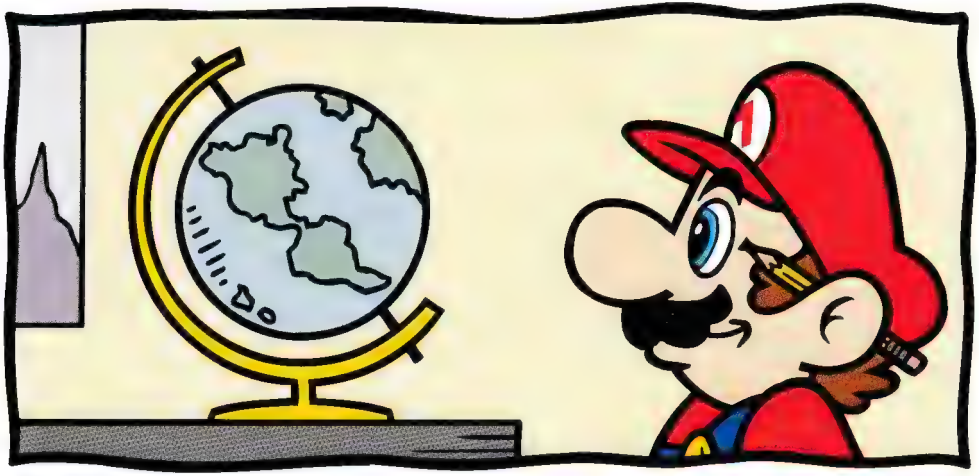
What do geographers study?



GEOGRAPHY

1. Agriculture
2. Earth's surface features
3. Rocks and minerals



Illustration, Gary Fields

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Geography

Physical geography concerns Earth's physical features—like continents, islands, mountains—and how they came to be. Human geography concerns humans' impact on the planet.

2 Geographers study Earth's surface features.

© D. Casimiro / Explorer

A physical geographer would look at this farm and focus on how the soil content influences the crops the farmer can grow. A human geographer would consider how this region's farm economy compares to the factory economy in neighboring regions.

In short, geography is the study of places and people. Physical and human geographers often study the same things, they just look at them from different points of view.

Physical Features

For example, a physical geographer might study a mountain range by focusing on how the range formed. Or she might study how the mountains influence the plant and animal life in the region. Or she might focus on weather patterns that exist because of the mountains.

Human Faces

A human geographer would consider the mountains' importance as a natural boundary or border. She'd study the development of human cultures on either side of the mountains and how the mountains influenced the development of their language, customs, economy and politics.

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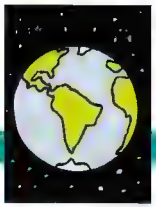
Which science studies the formation of Earth and its rocks?



GEOGRAPHY

1. Geology
2. Microbiology
3. Physiology

Illustration: Gary Fields

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Geology

Some geologists study Earth's history. Others focus on the future, and what humans might find beneath the surface of the planet.

1 Geology is the study of the formation of Earth and its rocks.

© BSIP

By examining a cross-section of rock like this a geologist can determine its age and the minerals it contains. Stratigraphy is the study of the composition of layers of rock.

The science of geology includes many specializations. Mineralogists, study minerals exclusively. Paleontologists study fossils. Volcanologists specialize in the study of volcanoes. And some geologists combine different disciplines. Marine geologists, for example, study rocks and minerals under the sea. Astrogeologists are concerned with the formation and structure of planets and objects in space.

Yesterday and Tomorrow

Geologists who study fossils and the development of rocks over time are searching for clues to Earth's past. They want to know how our planet was formed.

Other geologists, generally known as economic geologists, are more interested in Earth's future. They study rocks and soil searching for deposits of valuable minerals and ores, and for sources of petroleum.

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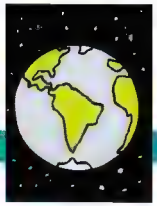
What is a mountain's snowline?



GEOGRAPHY

1. Boundary between snow-covered peaks and lower slopes
2. Depth of snow at the peak

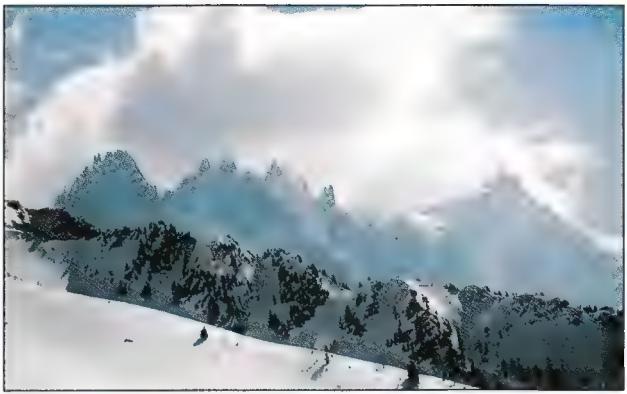
Illustration Gary Fields

©1997 Nintendo

Snowline

The snowline is the altitude level at which snow remains on a mountain year-round.

1 The snowline is the boundary between snowy peaks and lower slopes.



© L. Maquet

Mountains with perpetual snow at their peaks rise above the snowline.

The temperature at and above the snowline remains a constant 32°F (0°C) or lower so that the snow never melts. Below the snowline, snow melts by the end of summer.

Take a Peak

Not all mountains are high enough to have a snowline. The altitude of the snowline varies with the location of the mountain. In hot tropical regions, mountains must be at least 16,400 feet tall (5,000 m) before they have perpetual snow on their peaks. Mid-latitude mountains such as the Alps have a snowline at 8,860 feet (2,700 m). The snowline in the far north of Canada is less than 2,000 feet (600 m). At the poles, it's at sea level.

Cold and Quiet

Trees and most animals can't survive above the snowline. Only a few simple plants and hearty birds exist in those high altitudes. The perpetual cold makes it impossible for anything else to survive.

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Traveling from Africa to Australia, what would you cross?

GEOGRAPHY

1. Indian Ocean
2. Mediterranean Sea
3. Pacific Ocean

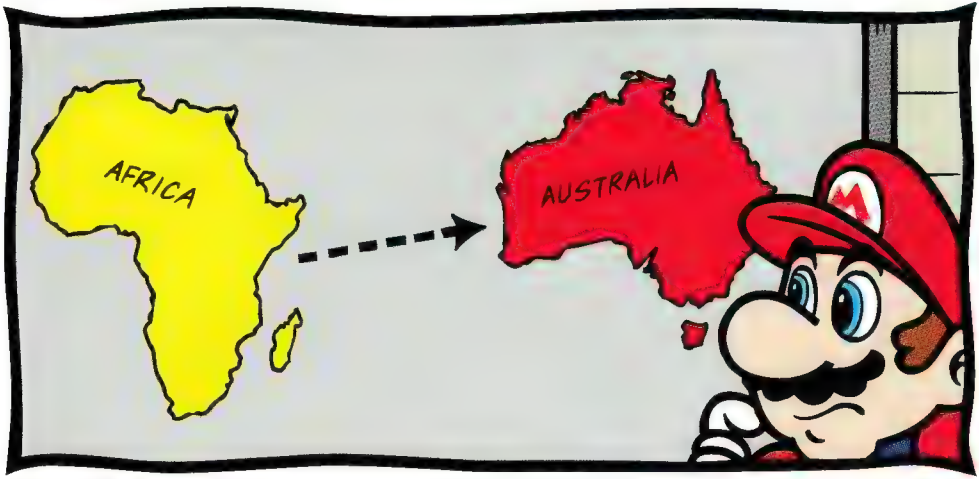

Illustration: Gary Fields

©1997 Nintendo

Indian Ocean

The Indian Ocean is the third largest body of water on Earth. It covers 28.4 million square miles (73.6 million sq km).

1 **Traveling from Africa to Australia you'd cross the Indian Ocean.**

© Behrens / Gamma

Because of its proximity to the Arabian Peninsula and the Persian Gulf, the Indian Ocean has become a strategic position for military ships. United States Navy vessels continually patrol the Indian Ocean.

The east coast of Africa forms the western border of the Indian Ocean. To the north, the ocean is bordered by Pakistan, India, and the nations of southern Asia. Indonesia and Australia form the ocean's eastern border, and it stretches south to Antarctica.

Trading Traffic

Though it's the smallest of the world's great oceans, the Indian Ocean has always been a busy place. Ancient Egyptians traveled on it to reach regions of Africa where they traded for gold and slaves. Arabian traders crossed it to reach India. And later, European traders sailed around the tip of Africa and across the Indian Ocean to reach Asia.

Oil and Outposts

Today, the Indian Ocean is a main shipping route used by the oil-producing nations of the Arabian Peninsula. It's also a military outpost, patrolled by naval ships from a variety of nations, including the U.S.

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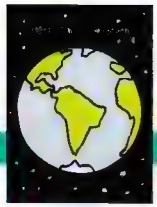
Where is Nepal?



GEOGRAPHY

1 Africa
2 Asia
3 Europe

Illustration: Gary Fields

©1997 Nintendo

Nepal

Located in the heart of the Himalayas, Nepal is bordered by India to the south and the Chinese province of Tibet to the north.

2 Nepal is a country in Asia.

© A. Bun / Gamma

Eight of the world's ten highest mountains are in Nepal.

Nepal is an independent nation with a complicated political history. Hundreds of years ago, it was a group of princely states; each ruled by a different prince. In the late 1700s, the states were united under a common ruler. In 1816, Nepal became a British colony. It was granted independence in 1923, and since then it has been, in turns, a constitutional monarchy and a Communist dictatorship. At present, the Nepalese government is elected by the people.

Temples and Treks

Modern Nepal attracts visitors who come to trek through the Himalayas and experience the country's ancient Hindu spirituality. The capital city, Kathmandu, is filled with Hindu temples and shrines. It also has become a safe haven for many Tibetan Buddhists who have left neighboring Tibet to avoid religious persecution.

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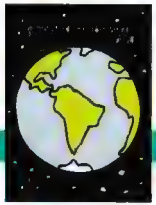
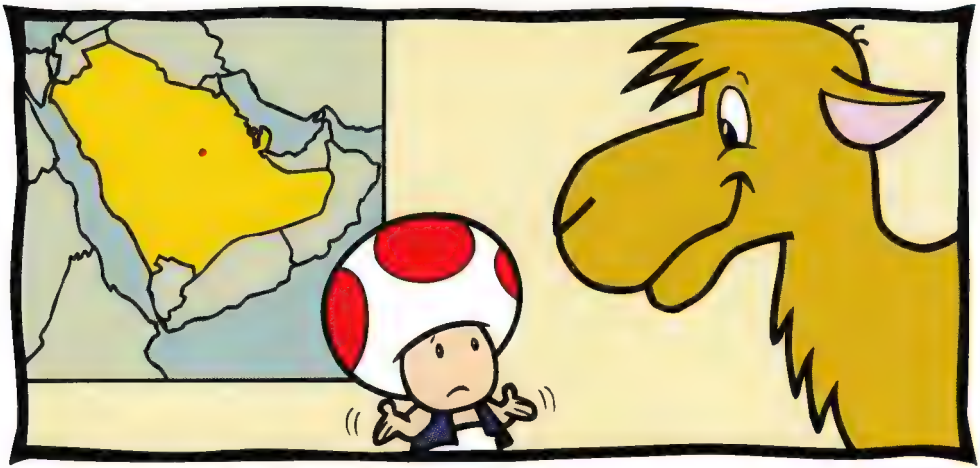
What is the capital of Saudi Arabia?



GEOGRAPHY

1. Abu Dhabi
2. Riyadh
3. Teheran



Illustration, Gary Fields

©1997 Nintendo

Saudi Arabia

The largest country on the Arabian Peninsula is Saudi Arabia. It's the world's third largest oil-producing nation, and a member of the Organization of Petroleum Exporting Countries, or OPEC.

2 Riyadh is the capital of Saudi Arabia.

© K. Arkell / Gamma

Oil produced in Saudi Arabia is exported to the United States and Europe. In exchange, the Saudis import food and manufactured goods.

Saudi Arabia is a desert nation. Though it's rich in petroleum resources, it's not very productive when it comes to growing food. The climate is extremely dry and the soil is too sandy to support many crops. So, about 70 percent of the food in Saudi Arabia is imported from other countries. Fortunately, the petroleum industry keeps the Saudi economy healthy, so people can afford to buy food and to support the cost of importing it.

Islamic Heart

Saudi Arabia is an Islamic nation, and virtually every citizen in the nation is a Muslim. This means that people follow a strict code of behavior. It also means that there's a strong emphasis on literature and art. Even people who can't read and write maintain a tradition of storytelling that has existed for centuries.

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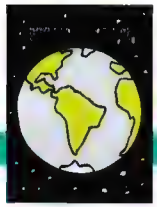
Which is the longest river in Europe?



GEOGRAPHY

1. Danube
2. Tiber
3. Volga

Illustration: Gary Fields

©1997 Nintendo

Volga River

The Volga is the main waterway of western Russia. It flows southeastward for about 2,300 miles (3,700 km), from north of Moscow to the Caspian Sea.

3 The Volga River is the longest river in Europe.

© Cosmos

Barges travel up and down the Volga River, carrying timber, oil, and agricultural products.

Much of the Upper Volga—the northernmost portion—is frozen solid in winter. However, in spring, when the snow melts, the river flows mightily. In fact, about 60 percent of the Volga's water comes from melting snow.

River Power

To harness the power of the Volga's water flow, ten dams have been built at various points along the river. These dams now provide hydroelectric power to homes and factories in regions near the river.

Trade Route

The Volga has been an important trade route since the 8th century. Sailors from Scandinavia traveled down the Volga and across the Caspian Sea to reach ancient Persia (now Iran). In modern Europe, the Volga is still a main shipping route for carrying goods from north to south through the former Soviet Union.

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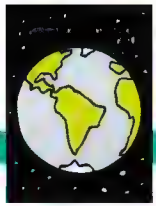
Where does the Nile River flow?



GEOGRAPHY

1. North to the Mediterranean Sea
2. South to the Indian Ocean
3. West to the Amazon River

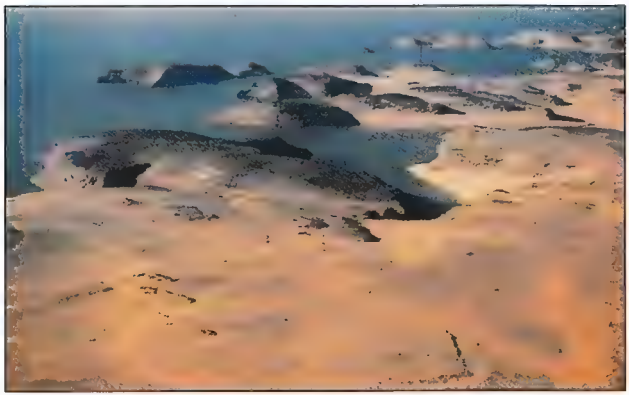
Illustration: Gary Fields

©1997 Nintendo

Nile River

The Nile is the world's longest river. It's formed from two tributaries, known as the White Nile and the Blue Nile.

1 The Nile flows north to the Mediterranean Sea.



© G. Boutin / Explorer

The source of the Blue Nile was discovered by Pedro Paez, a Spanish missionary in the 1600s. The source of the White Nile was found in the 1860s, by English explorer John Speke.

Though most people know it best as Egypt's major waterway, and the birthplace of ancient Egyptian civilization, the Nile begins far south of Egypt. The source of the White Nile is in mountains above Lake Victoria in the tiny nation of Burundi. From there, the White Nile flows through Rwanda and Uganda to Sudan.

Convergence

The Blue Nile originates in Ethiopia in the mountains above Lake Tana. From Ethiopia, the Blue Nile flows to Khartoum, Sudan, where it converges with the White Nile, and continues north through Egypt to the Mediterranean Sea.

Water at Work

In 1964, the Aswan Dam was built in southern Egypt. It was created to harness the waters of the Nile and use them to produce hydroelectric power. Lake Nasser, on the border of Egypt and Sudan, was created by the dam.

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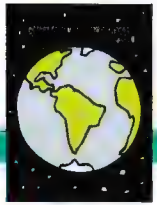
Which of the Great Lakes is bordered by Chicago, Illinois?



GEOGRAPHY

1. Lake Erie
2. Lake Huron
3. Lake Michigan

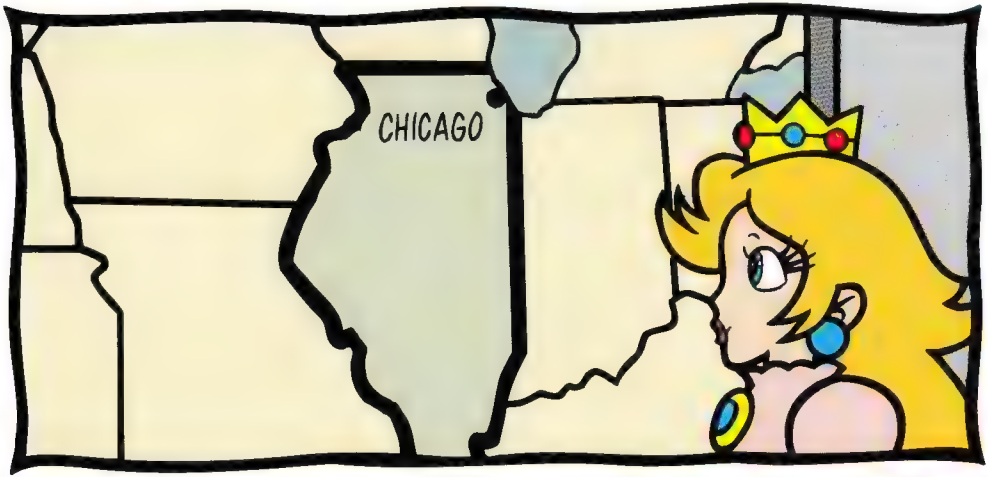


Illustration: Gary Fields

©1997 Nintendo

Great Lakes

The five Great Lakes are Huron, Ontario, Michigan, Erie, and Superior. Their initial letters spell the word "HOMES."

3 Chicago is on the banks of Lake Michigan.

© Len Strman

The United States cities of Chicago, Illinois; Milwaukee, Wisconsin; Green Bay, Wisconsin; Cleveland, Ohio; and Buffalo, New York, all are located on shores of the Great Lakes.

Of the five Great Lakes, only one lies completely within the United States. That's Lake Michigan, the third largest of the group. Lake Michigan is bordered by the states of Michigan, Indiana, Illinois, and Wisconsin. The other Great Lakes form part of the border between the United States and Canada.

Octopus Alert!

Lake Superior, the largest of the Great Lakes, is also the largest freshwater lake on Earth. It's bordered by the Canadian province of Ontario on the north and by the U.S. states of Minnesota, Wisconsin, and Michigan.

Lake Huron is the second-largest of the Great Lakes, followed by Lake Michigan, Lake Erie, and Lake Ontario. If you want to remember the names of the Great Lakes in size order, think of a "Super Hairy Man-Eating Octopus"—each letter stands for one of the Great Lakes.

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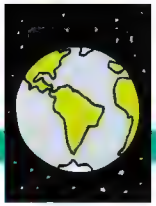
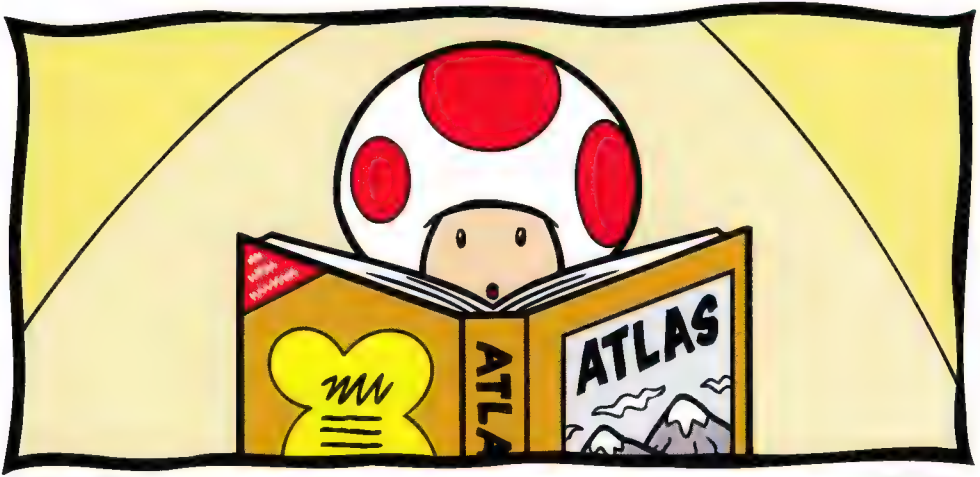
Which country is in Central America?



GEOGRAPHY

1. Guatemala
2. Syria
3. Zambia



Illustration, Gary Fields

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Guatemala

Like Mexico, its neighbor to the north, Guatemala was once home to ancient Mayan civilizations. Many Guatemalans are direct descendants of the Maya.

1 Guatemala is in Central America.

© Len Sirman

Buildings like these, constructed by Mayan Indians more than 1,000 years ago, lure tourists to the Central American nation of Guatemala.

Today, visitors travel to Guatemala to see the ruins of Mayan temples. The region of northern Guatemala known as Petèn was once the heart of the Mayan community. The area is filled with archaeological sites, some of which have not yet been explored.

Tikal Your Fancy

At the heart of the Petèn is the ancient city of Tikal, once one of the most important Mayan sites. Because it was hard to reach—surrounded by dense jungle—the ancient site remained intact until 1848, when European explorers found it.

Even now, some of the glorious Mayan buildings remain, including sky-high carved limestone pillars that date back more than 1,000 years. Among the hundreds of buildings at Tikal are temples, homes, and even ball courts. Tikal is now a Guatemalan national park.

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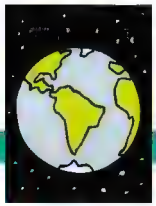
Which state is famous for its potatoes?



GEOGRAPHY

1. Idaho
2. Illinois
3. Indiana

Illustration: Gary Fields

©1997 Nintendo

Idaho

Though it sounds as if it could be a word from a Native American language, "Idaho" is actually a made-up word with no meaning!

Idaho is famous for its potatoes.

© Idaho Department of Commerce

This beautiful scene is of Lake Pen Oneide, which is located in the northern panhandle of Idaho.

Idaho, our 43rd state, is known for its unspoiled natural beauty and scenic areas like the Snake River and the Grand Tetons. But when you hear the name Idaho, you probably think of potatoes. The state produces most of the potatoes grown in the U.S.—4.5 million tons (4 million tonnes) a year.

Rich in Rocks

Idaho became a state in 1890. Its capital is Boise. Known as "The Gem State," Idaho produces 72 types of precious and semiprecious stones, some of which can't be found anywhere else on Earth. It's also the nation's largest producer of silver.

Yet some of Idaho's most fascinating rocks are located at Craters of the Moon National Monument. Here, rugged black lava rocks form a landscape that looks like the lunar surface. It's so authentic, it was used as a training ground for early astronauts.

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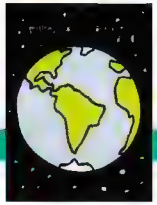
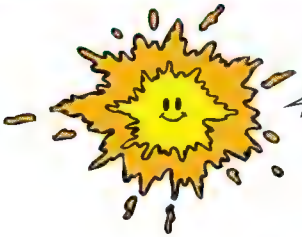
Which is Canada's French-speaking province?



GEOGRAPHY



1. Alberta
2. Ontario
3. Quebec

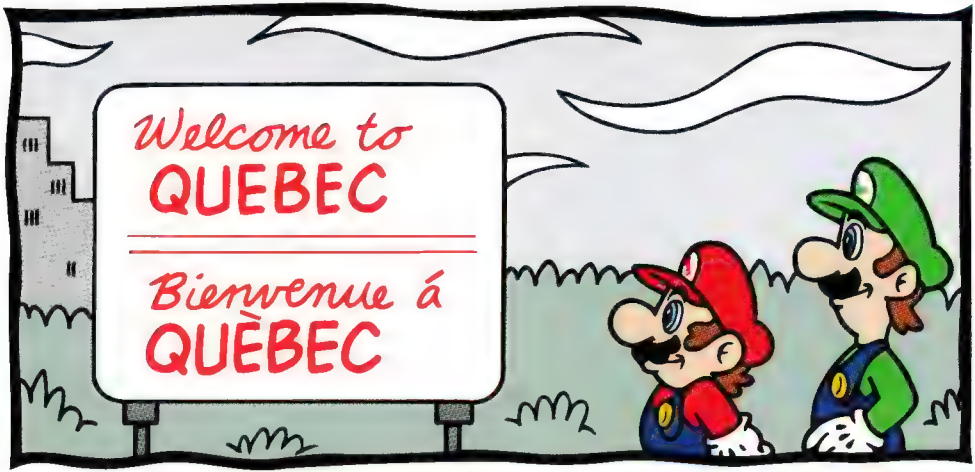


Illustration Gary Fields

©1997 Nintendo

Quebec

The province of Quebec was claimed by French explorer Jacques Cartier in 1534. French culture still survives there. About 80 percent of Quebec residents speak French.

3 Quebec is Canada's French-speaking province.

© Le Chateau Frontenac, Quebec

The landmark hotel Le Chateau Frontenac is located in historic Quebec City, Quebec.

Both English and French are official languages of Canada. Most Canadians speak English as their primary language. Most French-speakers live in Quebec.

Old World

Quebec City is the provincial capital. Its landmark is the Chateau Frontenac hotel, perched on a hill in the Upper Town. Quebec City is relatively small and quiet, but every February it comes alive during the Winter Carnival—a colorful celebration of music, art and culture.

New World

Montreal is Quebec's largest city. With more than 3 million residents, it's the biggest French-speaking city outside of Paris! Montreal is a thriving modern business city, but its Old Town contains buildings from the 1700s. The mix of old and new—modern style and historical significance—make Montreal a favorite tourist city.

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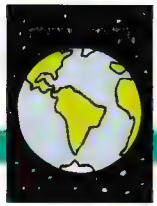
Which state is known as the "Mother of Presidents"?



GEOGRAPHY

1. Maryland
2. Massachusetts
3. Virginia

Illustration, Gary Fields

©1997 Nintendo

Virginia

Four of our first five presidents were born in Virginia. The colony was named for England's Queen Elizabeth I, known as the "Virgin Queen."

3 Virginia is known as the "Mother of Presidents."

© Virginia Tourism Corporation

Monticello, located 3 miles east of Charlottesville, Virginia, was the home of Thomas Jefferson, the third president of the United States.

Today in Alexandria, Virginia, tourists can visit Mount Vernon, the ancestral home of George Washington. In Charlottesville, Thomas Jefferson's home, Monticello, and James Monroe's Ash Lawn, are open to the public. Colonial life is recreated at Colonial Williamsburg, a fully restored 18th-century city and living museum.

Military History

For generations, Virginia's history has been tied to the military. British General Cornwallis surrendered at Yorktown during the Revolutionary War. Virginia's Civil War battle sites include Manassas, Fredericksburg, and Petersburg—now national parks. The Appomattox Court House is where Generals Grant and Lee called a truce in the Civil War. Today, Arlington is home to the Pentagon, U.S. military headquarters, and Arlington National Cemetery, site of the Tomb of the Unknown Soldier.

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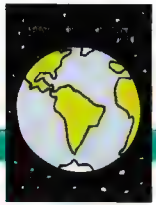
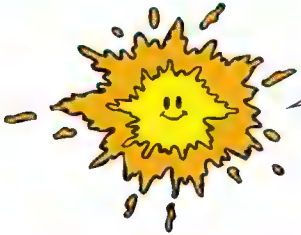
Which product comes from rain forests?



GEOGRAPHY



1. Latex
2. Cocoa
3. Both

Illustration: Gary Fields

©1997 Nintendo

Rain Forest Products

The warm, wet rain forest is home to thousands of useful plants. Among them are rubber trees, which produce latex used to make rubber.

3 **Both latex and cocoa come from rain forests.**

© Earth Scenes / Sunset

Could one of these rain forest plants hold the cure for cancer? Medical researchers are working to find out.

Cacao seeds are used to make cocoa, chocolate, and cocoa butter for skin creams, and suntan lotions. Among the other foods from the rain forest are fruits, such as bananas, pineapples, and papayas; and nuts, such as Brazil nuts and cashews. Coffee, sugar, and cinnamon come from the rain forest, too.

Medicinal Plants

About one-fourth of the medicines we commonly use come from rain forest plants. Yet, medical researchers have only begun to learn about the thousands of medicinal plants in the rain forest. Many, such as rosy periwinkle, have been shown to alleviate some types of cancer.

Keep It Alive

The practice of clearing tropical rain forests for their wood, or to make way for development, destroys many of these valuable plants. This is one reason countries have started to enact laws that will preserve the rain forest.

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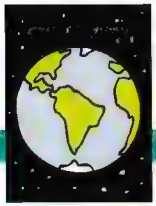
Where is the capital of the Cherokee Nation?



GEOGRAPHY

1. Miami, Florida
2. San Diego, California
3. Tahlequah, Oklahoma

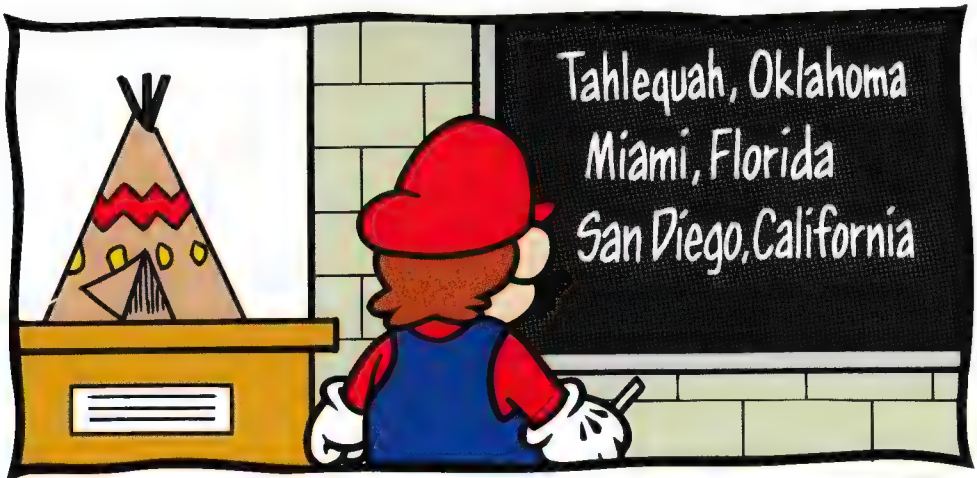


Illustration Gary Fields

©1997 Nintendo

Oklahoma

In Tahlequah, the Cherokee Heritage Center introduces visitors to Cherokee history and life. Tsa-La-Gi is a recreated 17th century Cherokee village.

3 Tahlequah, Oklahoma, is the capital of the Cherokee Nation.

© Oklahoma Tourism / Fred Marvel

The state capitol, located in Oklahoma City, features an oil well named "Petunia #2" because drilling began in the middle of a flower bed.

Oklahoma, our 46th state, is deeply tied to Native American history. In addition to the Cherokee, Oklahoma is home to a number of Native American people including Creek and Choctaw. In fact, the name Oklahoma comes from the Choctaw words meaning "red people."

Buckle in the Belt

Located in the center of the U.S., just north of Texas, Oklahoma is known as the "buckle" in America's tornado belt. It's hit with more tornadoes than any state. The land is dry and prone to drought. Yet below the surface, Oklahoma is rich in resources. It's a principal oil-producing state. There's even a working oil well in the state capital, Oklahoma City.

Famous Folks

Among Oklahoma celebrities are singers Reba McEntire and Garth Brooks, quarterback Troy Aikman and gymnast Shannon Miller.

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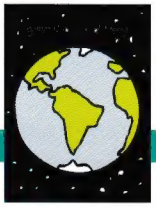
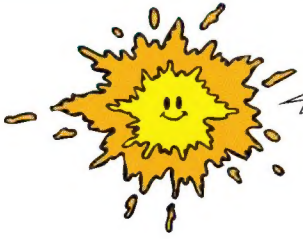
Which is the capital of Brazil?



GEOGRAPHY



1. Brasilia
2. Rio de Janeiro
3. Sao Paulo

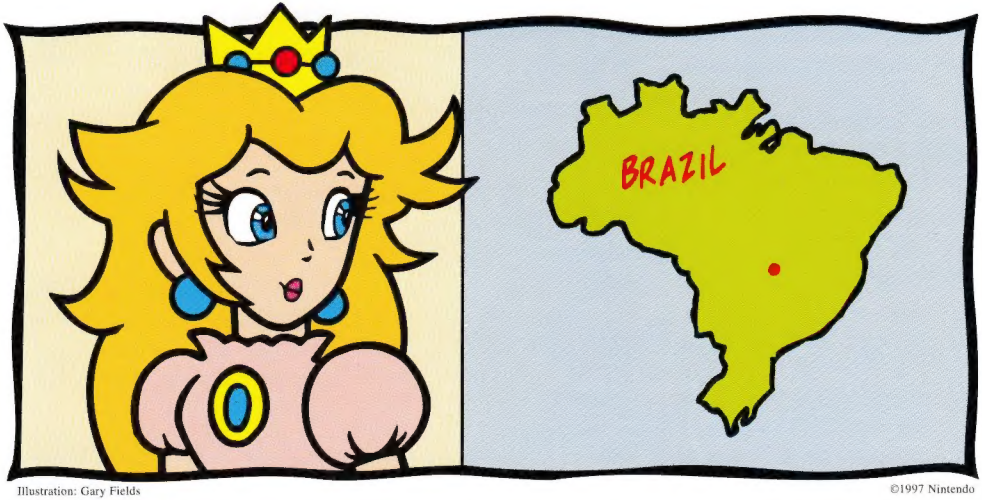


Illustration: Gary Fields

©1997 Nintendo

Brasilia

Located in the center of Brazil, the city of Brasilia was built specifically to be the national capital.

1 Brasilia is the capital of Brazil.

© Werner Otto / Sunset

The twin towers of the National Congress in Brasilia are among the capital's recognizable landmarks.

Unlike many world capitals, which developed as trading centers in ancient times, Brasilia is a modern city. It was planned in the 1950s as a magnet to draw settlers to the barren, uninhabited central regions of Brazil. Construction of the city began in 1957.

Era of Progress

Until the 1950s, almost all of Brazil's business activity was in coastal cities such as Rio de Janeiro—Brazil's largest city and former seat of government—and Sao Paulo.

Hoping to encourage growth throughout the country, in 1955, Brazil's president Juscelino Kubitschek pushed ahead with plans to build a new capital. Lucio Costa planned the city and architect Oscar Niemeyer, who designed the United Nations Building in New York, designed Brasilia's major buildings.

The city of Brasilia was officially inaugurated in 1960. Today it has more than 1 million inhabitants.

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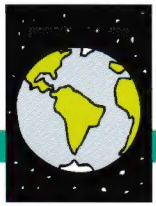
Where is the Eiffel Tower?



GEOGRAPHY

1. Milan, Italy
2. Paris, France
3. Riga, Latvia

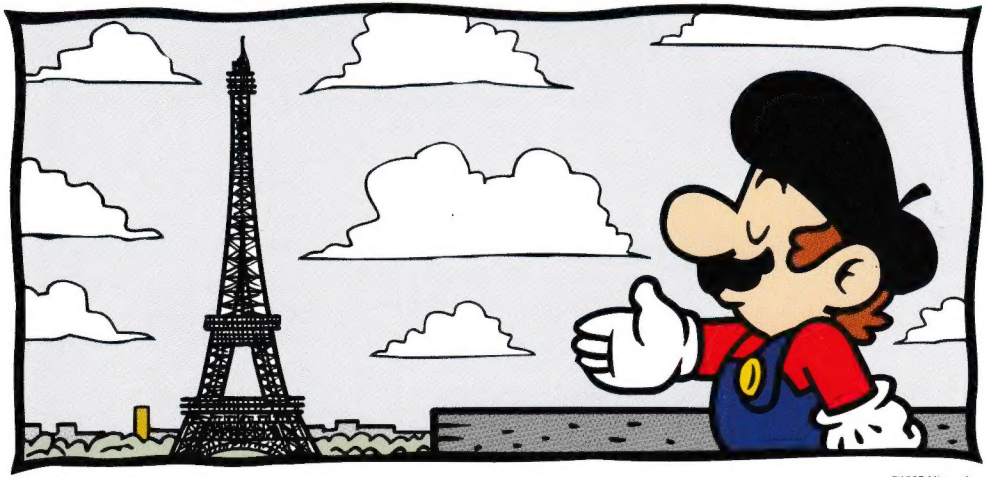


Illustration: Gary Fields

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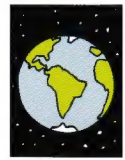
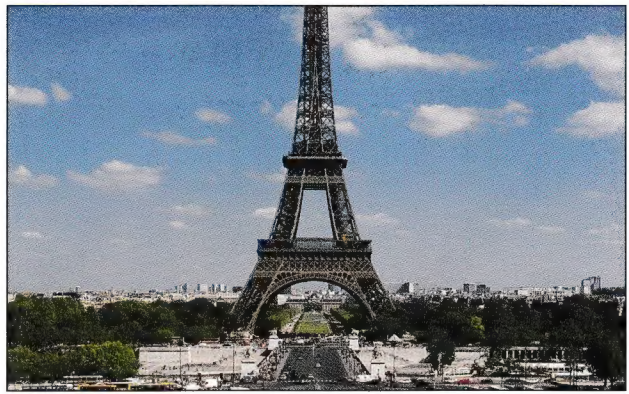
Eiffel Tower

The Eiffel Tower was designed by Gustave Eiffel for the Paris Centennial Exposition of 1889. It's one of the world's most recognizable landmarks.

2 The Eiffel Tower is in Paris, France.





© Werner Otto / Sunset

Gustave Eiffel, designer of the Eiffel Tower, was mainly a bridge designer. He used steel girder construction to build this world-famous landmark.

The Centennial Exposition was organized to commemorate the 100th anniversary of the French Revolution. To mark the event, the French government wanted to build a monument. Hundreds of designs were submitted for the project. The winner came from Gustave Eiffel.

Scaling New Heights

Eiffel's design was revolutionary. At 984 feet (300 m), it was to be the tallest structure in the world. Though the open framework design was relatively inexpensive to build, it was a marvel of engineering. The building was twice as tall as any in Europe, yet it could withstand strong winds. The sloped base created the need for elevators that could rise on an incline. These were provided by Otis Elevator Company of the U.S.

The Eiffel Tower remained the tallest building in the world until the Chrysler Building in New York was opened in 1930.

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